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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Anything Wrong with Chemical Plant?

THE question, "Is there anything wrong with British chemical plant?" was a fairly straight one to select for discussion directly after the annual dinner of the British Chemical Plant Manufacturers' Association, but Colonel G. P. Pollitt, of Billingham-on-Tees, who opened the discussion, seems to have got in quite a number of useful points and suggestions, without too much criticism. The factors that determine the placing of orders he took to be workmanship, material, design, cost, and time of delivery. In workmanship the British chemical plant manufacturer has long excelled; he has not gone back, but the position has been changed by the advances of foreign makers. In the matter of material, it was admitted that the British maker used the best possible, but the difficulty was to decide what was the best type of material rather than what was the best grade of the chosen type. A medium is used, as Colonel Pollitt put it, not because it is not corrodible but because it is less corrodible than the next best material. Stoneware, silicon iron, and enamelled ware are all good in their different ways, and even as regards stainless steel, if we still hold the premier position, we have certainly not perfected present adaptations of its use or exhausted

potential extensions of its application in chemical manufacturing processes.

In the design of plant Colonel Pollitt's frank opinion is that British makers are not keeping abreast of modern developments. The case of evaporators was mentioned as one in which America has taken the lead out of our hands, notably in the development of forced circulation evaporators. The average price, again, demanded for British chemical plant was higher than the continental figure, but this to some extent was offset by the better workmanship and sounder construction. Labour was admittedly more expensive here, but on the other hand the number of tons of product per man-hour made the difference in wages a small factor. It was interesting to hear that, in spite of the higher cost of British chemical plant, Imperial Chemical Industries had determined to place and actually had placed orders in this country to the extent of at least 98 per cent. of its total plant requirements, and this with the certain knowledge that the plant could have been obtained at lower rates abroad. This policy, however, was considered to be economically sound, since it was necessary to have in this country a chemical plant manufacturing industry capable of meeting all home requirements, and such an industry could only be built up on home support.

Emphasis on the necessity of quick delivery of plant was followed by the contention that under no conditions should the chemical manufacturer have to design, develop, and manufacture the plant he desires; having laid his requirements before the chemical plant maker, he should be able to leave all that to the latter. This, it was contended, was far from being the case at present. Generally, Colonel Pollitt contended that progress could only come through rationalisation of the plant-making industry, greater standardisation, the reduction of the number of small independent units, and the creation of large scale works, fully equipped for research, design, and production over their whole range of products.

All of this, of course, was said in the most frank and friendly way, but it was not to be expected that all the points would be accepted without question, with Mr. J. Arthur Reavell in the chair and several equally alert colleagues in attendance. Mr. Reavell, in expressing agreement with Colonel Pollitt's remarks on American evaporators, explained that British chemical manufacturers were not as willing to take up new things as Americans, and the way to get them to take anything up was to get it adopted in America first. Another point he emphasised was the importance of giving the plant manufacturer access to the plant while in operation, as no one else was likely to get so much out of it. Mr. W. Reavell also drew attention to the reluctance of the British chemical manufacturer to accept high speed working, persisting in the use of low

speed plant that could be replaced effectively by high speed units resulting in increased efficiency and economy. We have only been able to touch on some of the points raised in the discussion, but enough has been said to indicate the interesting and suggestive character of the experiment.

Chilean Nitrate Industry

THE latest reports of the Chilean nitrate industry indicate a very remarkable recovery in the position and prospects of the Chilean producing companies. The action of the Chilean Government is, of course, mainly responsible for the new lease of life, first, by encouraging the formation of a nitrate selling corporation, and, secondly, by the grant of a subsidy which in actual cash means £250,000 to producers based on January-March, 1928, production, while the subsidy now promised on the sales for July, 1928, to June 30, 1929, appears likely to reach from £1,750,000 to £2,000,000. In the opinion of Messrs. Aikman (London), given in their annual review of the nitrate market, the improvement noted will make further headway during the next few years. In the opinion of some, the significance of the changed method of selling has not been generally realised, as it places in the hands of the Chilean Government the power to dictate prices, and may eventually pave the way to an international agreement on nitrogen prices. As it is, by fixing prices at moderate levels the Chilean natural product has been able to keep its place in competition with the synthetic article.

1929 Chemical Engineering Medals

THE interesting announcement is made in the Quarterly *Bulletin* of the Institution of Chemical Engineers that three new medals are to be awarded for the encouragement of meritorious work in chemical engineering subjects. One medal will be in honour of Professor Osborne Reynolds, whose researches on heat transmission and the flow of liquids are fundamental to the work of a chemical engineer. This will be awarded by the Council for the most meritorious contribution to the progress of the Institution during each year, and the medal, which will be in silver and bear the seal of the Institution, will be presented yearly by Mr. F. A. Greene. The name of the late Lord Moulton, who was so prominently associated with the work of chemical engineering during the war, is to be commemorated by two awards for papers on chemical engineering subjects. The senior award will consist of a medal in gold, bearing a likeness of the late Lord Moulton, and will be given for the best paper of the year of a mature character, read before the Institution and published in the *Transactions*. It is not proposed to confine the award to members of the Institution. The junior award will consist of a similar medal in silver, with a prize of books to the value of £3, for which graduates and students of the Institution only will be eligible. The award will be made for the best paper of the year communicated to the Institution, and deemed of sufficient merit to be published in the *Transactions*. The Institution may be congratulated on being able at this early stage of its career to join the older societies in the issue of permanent commemorative medals.

Books Received

- DIE GROSSEN CHEMIEKONZERNE. By Dr. Alfred Marcus. Leipzig: S. Hirgel. Pp. 100. R.M. 8.
THE CONSTITUTION OF SUGARS. By W. N. Haworth. London: Edward Arnold and Co. Pp. 100. 8s. 6d.
PROCEEDINGS OF THE CHEMICAL ENGINEERING GROUP. Vol. 9. 1927. London: Chemical Engineering Group. Pp. 148. 10s. 6d.

The Calendar

Jan.		
7	Society of Chemical Industry (London Section). Joint Meeting with the Fuel Section. "The Action of Hydrogen upon Coal." J. Ivon Graham. 8 p.m.	Burlington House, Piccadilly, London.
7	Institution of the Rubber Industry (London Section): "Factory Organisation in the Rubber Industry Affecting the Conditions of the Worker." F. W. Bennett.	Blackfriars Theatre, Lever House, London, E.C.
8	Hull Chemical and Engineering Society: "Electric Cranes." G. R. Adamson and C. F. Tinker. 7.45 p.m.	Grey Street, Park Street, Hull.
8, 9 & 10	Optical and Physical Societies, Annual Exhibition of Scientific Apparatus.	Imperial College of Science and Technology, London.
9	Institute of Metals (Swansea Section): "Pulverised Coal in Metallurgy." G. E. K. Blythe. 7 p.m.	Thomas' Café, High Street, Swansea.
9	Institute of Fuel: "The Application of Pulverised Fuel Firing for Lancashire Boilers." H. A. S. Gothard.	London.
10	Institute of Chemistry (Manchester Section): "Pregl's Micro-methods of Analysis." H. D. K. Drew.	Manchester.
10	Oil and Colour Chemists' Association: "Nitro-cellulose Finishes." Bertram Campbell. 7.30 p.m.	30, Russell Square, London.
10	Institute of Metals (London Section): "The Lead Industry." H. C. Lancaster. 7.30 p.m.	83, Pall Mall, London.
11	Society of Chemical Industry (Manchester Section): Short Papers by Members.	17, Albert Square, Manchester.
11	Institute of Chemistry and Society of Chemical Industry (South Wales Section): "The Preparation of Coal for Market." 7.30 p.m.	Thomas' Café, High Street, Swansea.
11	Chemical Engineering Group: "The Relative Safeties of Mild and High Tensile Alloyed Steels under Alternating and Pulsating Stresses." Professor B. P. Haigh. 8 p.m.	18, John Street, Adelphi London.
16	Society of Chemical Industry (Newcastle Section): "Tar Distillation." Lecture I. S. A. Wikner.	Armstrong College, Newcastle-on-Tyne
14	Institute of Metals (Scottish Section): "Recent Developments in the Manufacture of Condenser Tubes." A. Spittle. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
15	Institute of Metals (N.E. Coast Section): "Some Aspects of Steam Turbine Development and Application." R. Dowson. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne
16	Society of Chemical Industry and Institute of Chemistry (Glasgow Sections): Lecture on Artificial Silk. W. P. Dreaper.	Glasgow.
16	Institute of Chemistry (Huddersfield Section): "Spiropyrans and the Formation of Coloured Ions.	Huddersfield.
16	Society of Glass Technology. 2.30 p.m.	Manchester.
16	Leicester Literary and Philosophical Society: "Present-day Methods of Water Softening." J. P. O'Callaghan. 8 p.m.	College of Technology, Leicester.
17	Society of Dyers and Colourists (Midlands Section): "Swelling of Fibres." A. J. Hall. 7.30 p.m.	Leicester Technical College
17	Society of Dyers and Colourists (West Riding Section): "The Analysis of Dyestuffs, Yesterday, To-day, and To-morrow." Professor H. E. Fierz-David.	Bradford.

The Suggestion Box in Chemical Works

Is It Worth While?

A correspondent, who has had experience of chemical works, discusses the merits of a works suggestion box, indicating some of the difficulties that may arise, the mistakes to be avoided, and the benefits that may result. The general conclusion is that the suggestion box is not an unmixed blessing, but has useful possibilities.

No matter in what capacity a man is employed, he has ideas, some of which, if properly applied, are valuable. The difficulty is to bring the idea to the place where it can be thoroughly exploited, for as a rule the man is too modest to draw attention to it without encouragement; hence the suggestion box, with the promise of reward should the idea prove acceptable.

But how will the suggestion be received? Will it be ridiculed, or will it cause resentment? This is what the workman asks himself, and failure to satisfy himself on this score often deters him from putting forward his idea. It is assumed that the primary object of the invitation is to promote economy, but this may have the effect of robbing a workmate of his job, and this would certainly cause resentment. It may be taken for granted that, for the most part, a man has ideas concerning his own job, even if others are affected, and he would not be foolish enough to proffer a suggestion the adoption of which would rob him of his own means of livelihood. Yet this is precisely what happened in one instance. The man mentioned his idea to his foreman, who strongly advised him to take it no further, but in spite of this advice it went into the suggestion box. He was duly called into the works manager's office, and received the reward, but was then told to forget all about the idea, as, should it be adopted, he would certainly lose his job.

The Encouragement of New Ideas

It is only at times that suggestions are invited. For months (and perhaps years) the suggestion box is ignored; then there is sudden activity and all and sundry are asked to send in ideas. Many treat the invitation in a jocular spirit; some seize the opportunity to put forward their pet ideas, while others are frankly sceptical of the whole business. The fact is that in many works the suggestion box is the outcome of zeal on the part of one highly-placed enthusiast, and is not favourably regarded by the works management as a whole. The contents are too likely to "set people by the ears," because so many of the suggestions encroach upon the preserves of others.

It is said that onlookers see most of the game, and this is probably the reason why a man in one department may see the shortcomings of another department, and be able to suggest improvements. The suggestion may not always be received in a proper spirit, and especially when the author is known, which suggests that it may be better to keep the source of inspiration dark. If the suggestion is adopted, and then put into operation as a managerial idea, there is not so much likelihood of resentment being caused as if it were known that the suggestion emanated from So-and-So. Against this, however, is the possibility of the author being disinclined to remain in the dark; he may like to be regarded as a clever fellow, and refuse to "hide his light under a bushel."

The suggestions of workmen, however, do not cause so much resentment as the suggestions of foremen and heads of departments, when they affect matters not strictly confined to their own departments. The head of a department often will not tolerate "interference" in any shape or form, and any suggestion for improving his organisation, emanating from an outside source, is regarded by him as unwarrantable interference. Any department head, fully occupied with the affairs of his department, is apt to overlook some little point which might prove to be of consequence, and it should not be distasteful to him to have his attention drawn to it by someone outside his department. Of course, it may be argued that if this "someone" were fully occupied with his own affairs, he would have no time for looking into the affairs of others, but it has to be remembered that all works departments are interdependent, and that there are many points of contact. A department head is primarily concerned with his own organisation, and if, as a result of an adjustment in another department, the efficiency of his organisation can be improved, he ought to lose no time in suggesting that adjustment. Interference with the internal workings of another department, which

cannot have the slightest effect upon one's own business, is, however, to be deprecated.

Such a case occurred only a short time ago. The head of the inspection department found that his work was considerably hampered by the method of dimensioning drawings, and he wrote to the works manager suggesting another method. The letter was sent by the works manager to the chief draughtsman, who returned it to the inspector with a curt endorsement to the effect that he was quite competent to control the organisation of his own department without outside help. Hitherto the inspector and the chief draughtsman had been on quite friendly terms, but it is easy to see that future relations would necessarily be embarrassed. The mistake was in making the authorship of the suggestion known; if the idea was worth anything, it could have been adopted officially by the management.

Secret or Open Ideas

Of course, if secrecy is to be maintained, it is possible that unscrupulous people will seek to do hurt by means of the suggestion box. There are many who are only deterred from doing someone "a bad turn" by the fear of being found out, and the secret suggestion idea is an excellent means by which a spoke can be put into somebody's wheel, without fear of reprisal. Again, secrecy breeds suspicion, and if it is known that secret suggestions are welcomed by the management, what is to prevent one thinking that So-and-So has taken advantage of this to get at somebody? Thus it will be seen that while publicity may cause resentment, secrecy will cause suspicion, and the question to be decided is "Which is the worse?"

A year or so ago the managing director of an engineering concern sent a letter to each of his department heads, asking for suggestions for improving the efficiency of the factory. Most of them responded, but one at least failed to do so, and upon being questioned he stated that all his ideas were being put into operation in his own department. It was pointed out to him that suggestions were wanted for the improvement of the factory as a whole, and that his ideas need not be confined to his own department. As he had had considerable experience in works organisation, he at length yielded to pressure, and sent in certain suggestions. After a time he noticed that the works manager was not so amiably disposed towards him as formerly, and ultimately he discovered the reason. It appears that the managing director had called in the works manager to assist him in perusing and classifying the suggestions received, and that the latter was greatly displeased with those emanating from the department head mentioned above, considering that they reflected upon his capabilities as a manager.

Not an Unmixed Blessing

From what has been written, it will be seen that the suggestion box is not an unmixed blessing; it may be useful to some extent in stimulating ideas, and some of these ideas may prove to be valuable, but it is an open question whether or not the suggestion box is really worth while. As a means for extracting ideas from the workman it may possibly be satisfactory, but, in the opinion of the writer, it should never be employed in connection with the higher policy, that is, for the suggestions of foremen or department heads. These should, in every case, be brought up at a round table conference, attended by all concerned, there to be discussed in detail, and rejected, amended, or accepted, according to the will of the meeting. The adoption of this course would at least ensure openness, and obviate all suspicion. The author of the suggestion would, of course, submit the proposal to the works manager in the first instance, but he would do so with a full sense of responsibility, knowing that its provisions would be open to criticism at an open meeting. On the other hand, he would know that the issue would not depend upon personal caprice; that it would not be turned down simply because it was resented by the head of another department.

Tariff Inquiry into Indian Chemical Industry

The Point of View of the Native Manufacturer

(FROM AN INDIAN CORRESPONDENT)

The Indian Tariff Board has been holding an inquiry into the question of the necessity for protecting the manufacture of certain chemicals in India against imports. The notes published below (which come from a trustworthy Indian correspondent) give the point of view of the native Indian manufacturer. They must not be regarded as representing the views of THE CHEMICAL AGE, and will naturally be in conflict with the interests of firms engaged in export trade to India.

THE Indian Tariff Board has been entrusted with the inquiry into the chemical industries of India, with a view to ascertaining whether they required protection against foreign manufactures imported into India. The inquiry commenced recently in Bombay, and evidence was given by a firm of chemical manufacturers, the Dharamsi Morarji Chemical Co. At the outset, the chairman of the Board explained that the inquiry would be confined to the eleven chemicals expressly named by the Government of India, namely, sulphuric acid, hydrochloric acid, nitric acid, magnesium sulphate, ferrous sulphate, potash alum, aluminium sulphate, sodium sulphide, zinc chloride, copper sulphate and Glauber's salt. The chairman also desired the witnesses to tell the Board definitely in rupees, annas and pies what they required.

Prejudice Against Indian Products

The Dharamsi Morarji Chemical Co. was established in 1919, and the works began to manufacture in 1922. The firm made commercial acids, chemicals, fine chemicals, fertilisers, etc. In their statement, the company said that the main prejudice against the products of the firm was that the foreign producers having been long in the trade, buyers in India thought that they must be making the best products. Also, as the firm was newly established, buyers were not yet certain of regular supplies of standard quality. Sulphur was at present imported into India from Hamburg. This was at present made duty free. Salt was obtained from salt works near Bombay. Bauxite was obtained from Central Provinces mines, and magnesite from the Mysore mines. Scrap copper, iron and zinc scrap and drosses, bones, oil cakes and nitrate of potash were supplied by the local market.

The company expressed clearly in their statement the fact that there was sufficient skilled labour available in India, and all their imported labour has been dispensed with and replaced by Indian labour. Regarding the markets for their products, the witnesses observed that it was only in the case of acids that the supply was actually equal to the present demand. In all other cases the demand was much greater than the total Indian output. The demand for acids would increase as new industries were started and the existing ones were further developed. In the case of acids especially, the capacity for production was much greater than the existing demand. The principal markets for the firm's products were Bombay, Ahmedabad, Karachi, Nagpur, Bangalore, Delhi and other important towns in India.

As regards exports, Indian chemicals could be exported to Japan, Burma, Java, China, Persia and Africa, because labour in India, and some of the raw materials, were cheaper than in Western countries, and these markets were besides nearer to India.

Foreign Competition

The witnesses referred to foreign competition as a very important factor to be reckoned with. England, Germany, and to some extent Japan also, were the keenest competitors in the Indian market. The main difference in the conditions of manufacture prevailing in India and elsewhere lay in the quantities and varieties produced in the foreign countries. In the latter, production was on a mass scale and so there were low unit costs. Conditions in India had led the company to adopt processes and plants for smaller production, which naturally entailed higher production costs. They had to import plant and machinery from abroad, while the foreign manufacturer had these things practically at his door, the result being that in India they had to invest proportionately larger capital for smaller production.

The witnesses preferred their greatest complaints against the foreign combines operating in chemicals in the Indian and other markets, mentioning the I.G. of Germany, and Imperial Chemical Industries of England. Between these two combines, the existence of any Indian chemical concern

was impossible, unless all legitimate protection was granted to the indigenous industry by the Government. The witnesses stated that without protection the industry was not likely to develop at all, or at any rate not so rapidly as was desirable in the interests of the country. It was thought that in about 20 years' time, India should be able to face world competition without the help of protection. It was necessary, the witnesses thought, that a permanent committee of the Tariff Board should keep a watch on the doings of the foreign trusts and combines, and formulate measures from time to time to protect the indigenous industry from their operations.

Measures Proposed

The company's statement gave very particular importance to chemical manures, which would now be required in larger quantities in agriculture, which was on the eve of a great advance.

The company suggested the following measures to safeguard the industry from outside competition: (1) Total prohibition of the imported commodities which were being produced in India; (2) Heavy tariff duties on chemicals; (3) Encouragement in the form of bounties and long term loans to Indian concerns that were making a serious attempt to promote the industry; (4) Prohibition of export of, or heavy export duties on, raw materials of the country. (5) The handing over by the Government to Indian firms of the manufacture of explosives, which were now manufactured in Government factories at enormous cost; and (6) Production of alcohols and spirits by private manufacture.

Cross-Examination

During the cross-examination, the President, referring to the alleged competition from the combines and their dumping of goods at low prices, suggested that as far as the main competition was concerned it came really from the German Trust in copperas, although there was competition from England. The witnesses stated that they were interested in alum and zinc chloride, which were produced in considerable quantities by I.C.I. The President also made it clear that the prohibition of exports which the company desired was not in the terms of reference. They could only propose protection.

The Magnesium Chloride Industry

The representative of the Pioneer Magnesia Works appeared before the Board and protested strongly against the unfair competition and the price-cutting devices of the German Magnesium Chloride Syndicate. The representative stated that his firm's manufacturing process did not require such expert supervision as would involve the employment of skilled labour from abroad. It would be able to export magnesium chloride from India, provided the same facilities were afforded in regard to shipping and freights as were enjoyed by more powerful rivals, especially the Germans. Against such competition, protection was necessary.

The representative further placed at the disposal of the Board papers on the subject of competition, and referred to negotiations between his firm and the Haverro Trading Co., the agents of the German Magnesium Chloride Syndicate, during which the German trust offered to give the witness' firm 30 per cent. of the business and to retain 70 per cent. themselves. When the negotiations fell through, the price of the product was cut down by one pound per ton in Bombay.

Dr. Mathai, a member of the Tariff Board, remarked at this stage that from a perusal of the trade returns for the year 1927-28, it appeared to him that when the duty on magnesium chloride was removed, the benefit did not go to the consumer, but apparently to the producer. The president observed that for the first time documentary evidence has been placed at his disposal which threw a flood of light on the methods of foreign trusts operating in India.

The German Case

To combat the impression created by evidence of the Pioneer Magnesia Works, Mr. S. Fuschman, manager of the Haverro Trading Co., appeared as witness on behalf of his firm, and stated that the whole Indian business represented to the German Syndicate no more than 3 per cent. of its total output. The consumption of magnesium chloride in India amounted to approximately 4,000 tons per year, 3,000 tons of which were imported, and 1,000 tons produced in India. As a matter of fact, at present 97 per cent. of the German magnesium chloride was being imported by Indian firms.

Mr. Fuschman then explained the circumstances under which the negotiations were undertaken, and sought to emphasise that the I.G. Farbenindustrie Aktiengesellschaft was not at any time in any way interested in these negotiations, that the Haverro Trading Co., Ltd., did not at any time hold sole importing rights from the German Magnesium Chloride Syndicate, and that the negotiations, far from having the object of strangling the Pioneer Magnesia Works, were really undertaken to guarantee the works a reasonable chance of existence. The Indian product was being obtained from the lye left after the manufacture of salt. It was dark in appearance, and consumers preferred the German magnesium chloride, which was whiter and considered of purer quality. Accordingly there was generally a difference in price of 8 annas per cwt. in favour of the German material. The Indian industry therefore started with a handicap under which it is still labouring.

Against Protection

Examined by the Board, the witness admitted that if the negotiations with the Pioneer Magnesia Works had not broken up, the German Syndicate would have given the Haverro Trading Co. their sole rights of import. He thought that the indigenous industry could not meet the whole demand of the country, and did not deserve protection. The prices in the Indian market depended mainly on local conditions.

Great Export Journals Merger

A new departure of great importance in trade journalism is announced by Benn Brothers, Ltd., which recently acquired the business of William Agnew, Ltd., the famous publishers, of Mark Lane. William Agnew, Ltd., were the publishers of *The British Trade Journal* among other papers. *The British Trade Journal* was the first export trade journal, and has led that field for the last sixty-seven years. Benn Brothers, Ltd., established thirty years ago *The Export World*, which has had a highly successful career.

It has now been decided that these two publications should join forces under the title of *The British Trade Journal and Export World*. The first number of the combined publication, which will be larger, more comprehensive, and more influential than any export journal ever published, will appear in February, in good time for the business opportunities presented by the British Industries Fair. From that time onwards *The British Trade Journal and Export World* will assuredly take its place as the indispensable organ of international and Empire trade.

Resumption of Chemical Engineering Group Meetings

ON Friday, January 11, at 8 p.m., there will be held the opening meeting of the second part of the current session of the Chemical Engineering Group of the Society of Chemical Industry. A paper entitled "The Relative Safeties of Mild and High-Tension Alloyed Steels Under Alternating and Pulsating Stresses" will be presented by Professor B. P. Haigh, of the Royal Naval College, Greenwich. The author's eminence in this special line of work is, of course, widely known, and the present paper will give some expression of the very considerable extent of his recent research. It will be a review of recent experimental and practical research on fatigue fracture, and show how, when loaded to the same nominal "factors of safety," the higher tensile steels appear distinctly more liable to fail from fatigue in practice. The meeting will take place in the House of the Royal Society of Arts, 18, John Street, Adelphi, London, and the chair will be taken by Sir Henry Fowler, a past-President of the Institution of Mechanical Engineers.

A Bookman's Column

THE CAMBRIDGE UNIVERSITY PRESS announces the first volume of a new series, "The Cambridge Series of Physical Chemistry," of which the general editor is Mr. E. K. Rideal, lecturer in physical chemistry at Cambridge. The object of the series is to provide text-books in which the recent advances in each of the provinces of physical chemistry are collected, compared, and analysed. The first volume, which will be published in January, is *Infra-Red Analysis of Molecular Structure*, by Mr. F. I. G. Rawlins and Mr. A. M. Taylor.

Longman's Green and Co. have published the fourth edition of Volume I of *An Introduction to the Chemistry of Plant Products*, by Drs. Paul Haas and T. G. Hill (pp. 530, 18s.). This volume deals with the nature and significance of the commoner organic compounds of plants, and the present edition has, in the main, been rewritten in order to incorporate recent advances in knowledge. The subject is dealt with in the following sections: fats, oils and waxes; aldehydes and alcohols; the carbohydrates; glucosides; tannins; pigments; nitrogen bases; the colloidal state; proteins; and enzymes; and there is an appendix on hydrogen ion concentration.

A two-volume textbook of chemistry—general, inorganic and organic—has been published (in German) by the firm of Georg Thieme, of Leipzig, under the title *Kurzes Lehrbuch der Chemie in Natur und Wirtschaft*, Volume I, general (Professor J. Matula) and inorganic (Professor J. Oppenheimer), pp. 566, 26 marks; Volume II, organic (Professor Oppenheimer), pp. 470, 22 marks; each 3 marks cheaper if paper covered. In comparatively small compass an up-to-date account of the present state of knowledge is given. This publication is of interest both as a text-book for study and as a work of reference.

In his book on *Feeding Stuffs*, published by Chapman and Hall (pp. 152, 5s.), Mr. A. S. Carlos, B.Sc., F.I.C., has presented, in a concise form, information which is not readily accessible, and which will be of use not only to chemists, students, and farmers, but also to those engaged in the handling of feeding stuffs in factories and offices, corn exchanges and markets. It is simply and clearly written. The subject is dealt with in the following sections: Composition and functions of feeding stuffs; grains and seeds; oilcakes and meals, and the manufacture thereof; animal products; sundry feeding stuffs; compound foods; comparative value of foods; animal rations; Fertilisers and Feeding Stuffs Act, 1926; feeding stuffs used in the British Empire; statistics; and tables of analyses.

A second edition, revised and enlarged, of *Colloid Chemistry*, by Professor The Svedberg, has just been published in the American Chemical Society Monograph Series (New York: The Chemical Catalog Co., pp. 302, \$5.50). In this addition, more space has been given to the application of X-rays to the study of sols and gels. The chapter dealing with the Donnan equilibrium has, in view of its growing importance, been revised. Other subjects to which special attention has been given, are improvements in the technique of ultramicroscopy, in methods for the measurement of diffusion and cataphoresis, and in the use of the ultracentrifuge. In this, as in the earlier edition, relatively more space is devoted to the description of investigations made in the author's laboratory than to the reporting of other work.

In view of the insistent demand for authentic technical information on nitrocellulose lacquers resulting from the great expansion of the industry, Messrs. Bruce K. Brown and Francis M. Crawford have compiled *A Survey of Nitrocellulose Lacquer* (New York: The Chemical Catalog Co., pp. 368, \$7.50). "The authors feel," states the preface, "that the present text includes references to practically all of the valuable information published in connection with nitrocellulose lacquer prior to January 1, 1928." Following an introductory account of lacquers, solvents, and diluents, the contents are arranged as follows:—Patent abstracts, arranged under the heading of the various countries, giving a short résumé of each patent (226 pages); a bibliography of the literature of nitrocellulose lacquers (30 pages); a subject index (78 pages); and an index of authors of patents and literature (12 pages).

Apparatus of Interest

Measuring Instruments and Recorders

WITHIN recent years, the usefulness of electrometric methods in analytical operations has become increasingly recognised. The apparatus in Fig. 1 has many practical applications in industry, such as the determination of the hydrogen-ion concentration of wines, dye-baths, tanning liquors, and fermentative vat fluids; the testing of the filtration of potable water and of sewage sludge; and the control of alkalinity in boiler feed water. It may also be used for the standardisation of indicators. Electrometric titrations of oxidising or reducing agents can be made, enabling routine analyses of

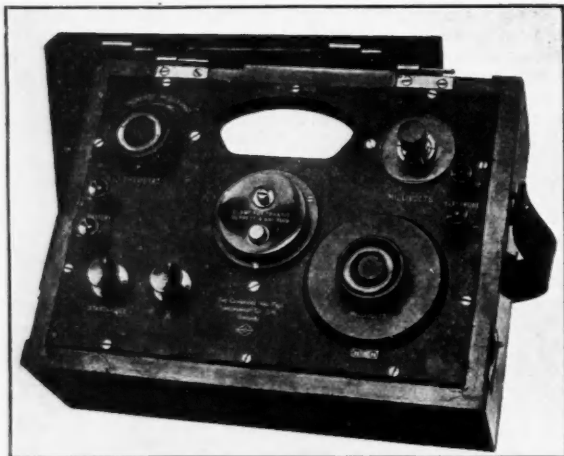


FIG. 1. HYDROGEN ION MEASUREMENT APPARATUS.

metals such as chromium, vanadium, or manganese in steel or alloys to be done with precision. With slight modification, the apparatus can be used for the electro-analysis of metals in alloys by the method of graded potential; the results are obtained much more quickly than by the old method of electro-deposition, and are of equal accuracy.

The principle upon which the apparatus is based depends upon the fact that if a hydrogen electrode be immersed in a solution, the potential difference between the electrode and the solution is a measure of the hydrogen-ion concentration. Since it is difficult, however, to measure this potential difference directly, it is customary in practice to employ a standard half-cell, usually a calomel electrode, and to complete the cell by a solution of potassium chloride having a definite concentration. The hydrogen-ion concentration in the solution under test is then readily deduced by subtracting the constant electromotive force due to the calomel electrode from the electromotive force of the complete cell.

The instrument consists of a pointer galvanometer of the "Unipivot" type, an adjustable resistance for standardisation, a five-range switch giving steps of 200 millivolts, and a fine adjustment switch. Readings can be obtained directly to one millivolt.

Dissolved Oxygen Recorder

The presence of dissolved oxygen in feed water is largely responsible for the corrosion of boilers, and de-aerating plants are frequently installed to keep the oxygen content down to a low figure. To eliminate the risk of the de-aerated water picking up oxygen on its way to the boiler, it is desirable to measure the amount of oxygen actually present in the water entering the boiler. The apparatus in Fig. 2 is designed for use where mechanical or evaporating types of de-aerators are employed. A small quantity of the feed water is passed at a constant rate through a tower filled with extractor rings, where it is "scrubbed" by a constant flow of pure hydrogen generated in the electrolytic cell. The hydrogen mechanically replaces the dissolved oxygen in the feed water, and the displaced gas forms a considerable percentage of the total gas issuing from the top of the scrubber. This percentage is measured by a katharometer of a similar design to a CO₂ meter, and is connected to a standard thread recorder calibrated in cubic centimetres of oxygen per litre of water. The

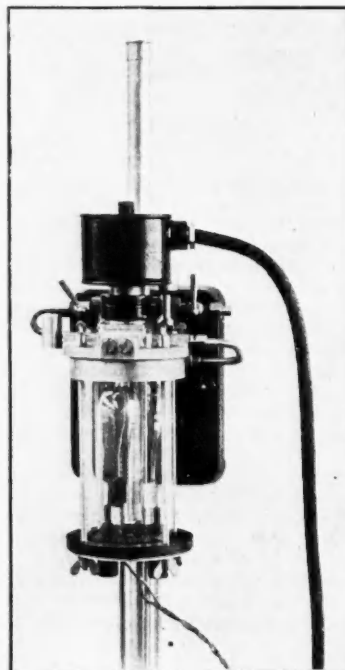


FIG. 2. DISSOLVED OXYGEN RECORDER

apparatus may be arranged to operate an electric alarm signal when the oxygen percentage rises above the critical figure. Single or multi-point recording, indicating, or combined indicating and recording outfits are made, while the recorder can also be connected, if desired, to standard CO₂ and CO meters and to a thermo-couple placed in the boiler flue.

Illuminated Dial CO₂ Indicator

It is now generally recognised amongst boiler engineers that instruments for visual observation of boiler house data should be so designed that their indications may be read easily, quickly and accurately, and, during recent years, various patterns have been evolved with this end in view.

The illuminated dial CO₂ indicator shown in the illustration (Fig. 3) has distinct and novel features inasmuch as it enables the percentage of carbon dioxide in the boiler flue gases to be read at a glance from a considerable

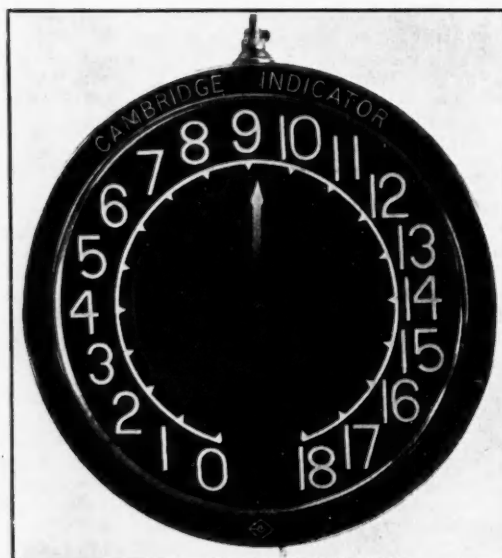


FIG. 3. ILLUMINATED DIAL CO₂ RECORDER

distance. The dial of the instrument is 13 inches in diameter, while the scale is clearly engraved in large white letters on a black ground. The actual figure representing the CO₂ percentage is illuminated by a white light, while the pointer, in line with it, is illuminated by a red light if the percentage is decreasing, and by a green light if it is increasing. The position of the illuminated spot on the dial, combined with the colour of the pointer, thus enables the stoker to gather at a glance valuable information regarding the combustion conditions. The ease of reading is increased rather than diminished if the general lighting of the building is of the subdued order common to many boiler houses.

The percentage of CO₂ is measured by an electrical method, the indicator being connected up to a CO₂ meter, soot filter, and an aspirator. In this particular instance, however, the galvanometer does not form part of the indicating instrument, but is an entirely separate unit, which can be mounted in a suitable position some distance from the boiler. This galvanometer can be arranged to operate any number up to six indicators in an installation, being connected to each in turn for a definite period by means of an automatic switch. As the indicators have no delicate moving parts they may be mounted by the boilers in positions which might be unsuitable for ordinary moving coil instruments. By adding a standard thread recorder to the outfit, continuous records may be obtained of the variations in the percentage of CO₂, which enables the management to keep a constant check on the work of the stokers. The recorder gives six simultaneous records.

All the above apparatus is manufactured by the Cambridge Instrument Co., Ltd., 45, Grosvenor Gardens, London, S.W.

Fertilisers in Canada

Production, Imports and Exports

PRODUCTION from plants in Canada engaged primarily in the manufacture of complete fertilisers amounted in value to \$1,844,032 in 1927. In addition, fertiliser materials such as calcium cyanamide, ammonium sulphate, animal tankage, ground bone and fish fertilisers, were made in factories classified under other industries; in 1927, the production value of these commodities amounted to \$6,278,707. Only 12 plants in Canada produced complete fertilisers as a major product; 6 were in Ontario, 2 in Nova Scotia, 2 in British Columbia, and 1 in each of Quebec and New Brunswick. Capital employed in these plants amounted to \$1,998,811 and the average number of persons employed the year round was 233. Payments in salaries and wages totalled \$224,564 and materials used in manufacture cost \$1,200,030.

Complete Fertiliser

Complete fertiliser was the major product of the industry. In 1927, production amounted to 49,593 tons, worth \$1,670,507, or 90 per cent. of the total output of the industry. Superphosphate was actually made in only one plant, although several other manufacturers of complete fertiliser sold quantities of superphosphate after dilution with a filler to meet the requirements of the trade. One concern was engaged solely in grinding and preparing basic slag. Production of complete fertiliser in other industries amounted to 22,000 tons, worth \$876,524, while ammonium sulphate, cyanamide, animal tankage, fish fertiliser and ground bone, used extensively as fertiliser, were also produced by concerns classified to other industries.

Imports of fertilisers and fertiliser materials during the calendar year 1927 amounted in value to \$4,138,053. This total included superphosphate, manufactured fertilisers, sodium nitrate, muriate and sulphate of potash, basic slag and ammonium sulphate. Exports were valued at \$5,379,582 and included cyanamide, ammonium sulphate and manufactured fertilisers.

PRODUCTS OF THE FERTILISER INDUSTRY IN CANADA.

	1926.		1927.	
	Quantity. lbs.	Selling Value. \$	Quantity. lbs.	Selling Value. \$
Bone Flour and Meal	407,960	8,075	264,588	5,968
Complete Fertiliser	74,066,935	1,235,415	99,185,351	1,670,507
All Other Products	—	206,099	—	167,557
TOTAL	—	1,449,589	—	1,844,032

PRODUCTION OF FERTILISER MATERIALS IN OTHER INDUSTRIES.

Industry.	Product.	1926.		1927.	
		Quantity. tons.	Selling Value. \$	Quantity. Tons.	Selling Value. \$
Cyanamide,	Calcium Cyanamide	96,364	3,962,509	98,763	3,231,326
Slaughtering and Meat Packing	Animal Tankage	13,845	575,201	16,364	783,606
	Bone, Raw, Ground	4,901	175,872	5,251	197,784
	Complete Fertilisers	19,855	807,678	22,000	876,524
Fisheries	Fish and Whale Fertilisers	—	213,136	13,630	158,476
Coke and Gas ..	Ammonium Sul- phate	23,655	1,015,578	24,708	1,030,991
TOTAL	—	—	6,749,974	—	6,278,707

CANADIAN IMPORTS AND EXPORTS.

	1926.		1927.	
	Quantity. lbs.	Value. \$	Quantity. lbs.	Value. \$
IMPORTS.				
Ammonium Sulphate	4,597,400	135,455	6,363,100	160,150
Basic Slag, Crushed or Ground	11,442,500	74,820	12,942,800	82,395
Cyanamide	156,200	3,961	1,500	150
Kainite and Other Crude German Potash Salts ..	12,200	83	863,100	11,283
Potash, Muriate of, Crude ..	29,665,000	432,537	37,346,900	627,997
Potash, Sulphate of, Crude ..	1,716,700	36,395	1,548,300	36,018
Soda, Nitrate of	57,735,300	1,417,710	53,366,800	1,252,730
Fertilisers, Superphosphate	153,837,300	925,515	173,177,700	979,261
Fertilisers, Compounded or manufactured	56,063,300	666,204	83,925,500	988,069
TOTAL	315,225,900	3,692,680	369,533,700	4,138,053
EXPORTS.				
Ammonium Sulphate	32,764,400	813,115	33,893,500	730,815
Cyanamide	165,868,700	3,823,628	221,734,900	4,623,461
Fertilisers, Manufactured ..	2,181,200	27,573	2,148,100	25,306
TOTAL	200,814,300	4,664,316	257,776,800	5,379,582

The Bideford Black Mine

IN accordance with Stock Exchange regulations, particulars are advertised, for information only and not as an invitation to subscribe for shares, of Bideford Black, Ltd., which has an authorised capital of £100,000 divided into 400,000 shares of 5s. each, all of which are issued and fully paid. The company was formed on December 20, to acquire from Devon Anthracite, Ltd., and develop the Bideford Black Mines, the only known source existent in this country of natural mineral black and of very rare occurrence in the world, and which have been worked for upwards of 100 years; and also to acquire from Devon Anthracite, Ltd., its anthracite properties at Bideford. N. Devon (included in the above-mentioned Mineral Black Mines). From surveys made it is estimated that to a depth of 600 yards only the Mineral Black seam will yield 5,000,000 tons of crude.

Speaking at a meeting of the Bideford Rotary Club on Friday, December 21, Mr. M. F. Phelan said it appeared many people were under the impression that the development of the anthracite deposits would mar the beauty of Bideford. This, however, was not so. Carbon was the largest component part and the most valuable. If they could get the maximum of the carbon (95 per cent.) its value per ton would be approximately £50 to £55. The problem that had been engaging them, in consultation with the laboratories of London and New York, was how to control and capture the whole of the carbon, and they had now succeeded in getting the requisite machinery.

A Book on Oxy-Acetylene Welding

A VERITABLE mine of information on welding is contained in *A Handbook for Oxy-acetylene Welders*, by L. M. Fox, which has been received from Allen-Liversidge, Ltd., of Victoria Station House, London. The book contains general descriptions of the principles of high and low pressure oxy-acetylene welding, followed by precise instructions for using each system and a detailed description of the apparatus used therewith. There are also special sections on the properties of metals, welding of various metals, and details of the acetylene air welding process. The appendices include a section devoted to a memorandum on the dangers from the use of acetylene gas and oxy-acetylene welding. The book is well illustrated by photographs and drawings, and contains four colour illustrations of which the publishers express the opinion that they are so near to an actual representation of the colours of the flames as to be of real and practical use to oxy-acetylene blowpipe operators.

Low Temperature Carbonisation

The Essentials for Commercial Success

THE present great activity as regards new low temperature carbonisation companies and extensive dealing in shares only serves to emphasise that two of the most important factors for successful commercial development are extensive large scale experience and ample financial resources, combined with the services of an adequate scientific staff. A vast new industry cannot be established in any other way, and significant in this connection are the activities of the International Combustion Engineering Corporation and its associated companies, not only in Great Britain, including the Underfeed Stoker Co., Ltd., and Coal Oil Extractions, Ltd., but in other countries, particularly France and Germany, with headquarters in Paris and Berlin respectively.

The important developments taking place in connection with their "K.S.G." process are now well-known, including for example, the erection of a large scale plant at a well-known gas works in London, and at the Mines de Lens in France for the utilisation of bituminous gas coal dust and smalls, as well as the great extensions to the original plant at Essen. In particular, the plant which will be completed about March next in New Jersey, U.S.A., is the largest ever erected in the history of low temperature carbonisation, comprising eight retorts, each with a throughput of 80 tons of coal per 24 hours, that is about 4,000 tons per week.

International Combustion, Ltd., are, of course, well-known for "Lopulco" pulverised fuel, in connection with which system it is stated there are more than 600 patents, while about 70 per cent. of the pulverised coal burnt under steam boilers is operating on these lines, as well as for many other sections of power generation and coal utilisation.

The many well-known British, American, German, and French engineers associated with International Combustion Companies have realised for some considerable time past that the next great advance in fuel utilisation is low temperature carbonisation, and it is for this reason also they have concentrated particularly on their "McEwen-Runge" process for the low temperature carbonisation of pulverised fuel, with which already extensive large scale commercial experience has been obtained at the Lakeside Power Station, Milwaukee.

Another significant development also in this field is that the International Combustion Engineering Corporation acquired some time ago the J. T. Lewis Company, the largest firm of tar distillers in the United States, representing itself a very extensive organisation, thus ensuring the proper utilisation of the low temperature tar, while we understand also that for some time past intensive research has been carried out in this connection, especially from the point of view of utilising part of the tar in the manufacture of Bakelite and moulding compounds by interaction with formaldehyde as well as for wood preserving.

Thus there will be shortly in commercial operation "K.S.G." low temperature carbonisation plants in four of the chief countries in the world, with corresponding developments in the way of the utilisation of tar to the best commercial advantage, in addition to "McEwen-Runge" process activities.

Hydrogenation Catalysts

Report on Work at Birmingham

AN interesting report on the work at the University of Birmingham of the Department of Oil Engineering and Refining (Petroleum Technology) has been issued by Professor A. W. Nash, head of the Department.

Professor Nash points out that the hydrogenation of bituminous substances under high hydrogen pressure in the presence of catalysts has increased enormously the scope of the old non-catalytic Bergius process. His Department as early as 1925 pointed out that the effect of catalysts in this reaction, and experiments upon coal, lignin, and cellulose carried out by Dr. Bowen were published to support this view. Experiments are being carried out continuing the previous catalytic work, and using the starting materials: Persian pressure distillate and fuel oil (supplied by Sir John Cadman) and low temperature tar and crude Bergius tar (supplied by the Chief Engineer of H.M. Fuel Research

Station). The German concern, it is stated, has published no experimental details and it is suspected that their claims are only achieved by a succession of reaction vessels in which the vapours pass over different catalysts. It is hoped that the University will be able shortly to describe the action of many other catalysts than those used in the earlier work, and thus add to the certain knowledge of the real value of these processes to the petroleum industry, particularly in view of the possible application of this technique to the inferior heavy petroleum residues. Progress is also reported in research work with regard to synthetic fuel from carbon monoxide and hydrogen. Professor Nash expresses appreciation of the practical way in which leaders of the petroleum industry have helped the Department. He was indebted to the various oil companies having processes and plant in this country in allowing himself and his colleagues and, in some cases, students to visit works and gain much valuable information.

Eight undergraduate scholarships, each of the value of £60 per annum, tenable for three years, are given by various commercial companies. The obtaining of scholarships from industry (adds Professor Nash) has been a difficult and in some respects a disappointing task.

Exposition of Chemical Industries

THE twelfth Exposition of Chemical Industries will be held at the Grand Central Palace, New York City, from May 6-11, 1929. The Exposition draws together chemists, engineers, manufacturers and others interested from forty industries which are dependent in their operations upon a chemical change in the nature of their material or are under chemical control. The Exposition of Chemical Industries has been a leader in the creation, development and growth of the chemical industries of America. It brings together among its exhibits between 350 and 450 exhibitors displaying their products. It embraces in this wide range of exhibits products like apparatus for precise measurement of pressure, volume, flow, temperature, time; laboratory apparatus, supplies, chemicals, etc.; the raw materials used in all the chemical industries, the chemicals, dyestuffs, technical materials and chemical products which are applied in the industries and arts. There are in the Exposition special sections for Laboratory Equipment, a Southern Section and a Canadian Section. The Students' Course of Lectures, which has been an institution in the past Expositions will be repeated again. These lectures by authorities in their work are divided into two groups: one for elementary students where an extension knowledge has not been gained, and the other an advanced course for senior and graduate students. Information concerning this Exposition may be obtained direct from the Offices of the Exposition, in the Grand Central Palace, New York, Charles F. Roth, manager.

British Industries Fair

Advance Overseas Edition of Catalogue

ON New Year's Day we received a copy of a special advance overseas edition of the catalogue of the London Section of the British Industries Fair, 1929, which is now being issued to 10,000 business men in Europe, North America, South Africa, and the eastern coast of South America, including all those buyers who have notified the Department of Overseas Trade of their intention to attend the Fair. By this early issue, which has only been made possible by the keenness of British manufacturers to participate in the Fair, trade buyers in cities as far apart as Constantinople, Capetown and Vancouver will be able to receive a copy of the Fair catalogue before starting their voyage to England. The catalogue, apart from containing descriptive entries of the exhibits of more than 1,200 British manufacturers, embodies a complete classification of all those exhibits by trades and indexes in nine languages, enabling foreign buyers easily to trace the goods in which they are particularly interested. Enclosed with this 700 page catalogue is an advance list of some 700 firms exhibiting at the Birmingham Section, which takes place concurrently with the London section from February 18 to March 1.

New Year Calendars and Greetings

THE Year Book for 1929 of the Colour Users' Association, bound in gilt-tooled leather, appears in an enlarged and improved form. Not only has a handy pocket diary for engagements, etc., been incorporated, but the information it contains relating to the dyestuffs industry is invaluable to those interested in the colour using industry. In a foreword, Mr. H. Sutcliffe Smich (chairman) states that greater progress in the standardisation of dyes and the introduction of new colours is vital to the textile industries and expresses a hope that helpful collaboration between makers and users will do much to achieve this result. Mr. Ellis Green, the secretary, is to be congratulated on the production of an excellent manual for the colour user.

The neat leather-bound pocket diary and notebook for 1929 issued by Scottish Dyes, Ltd., Grangemouth, contains the usual general features, but the section relating to the company's own dyestuffs—the well-known Caledon, Solway, Celatene, and Soledon Colours—has been considerably enlarged.

The pocket diary for 1929 issued by the Manchester Section of the Society of Chemical Industry is a very neat affair in leather binding. In addition to a syllabus of the meetings of the Section and of other scientific organisations in the Manchester area, the compilers have introduced a series of startling insets in the diary section to act as reminders to the negligent of the duties that they have overlooked or may be liable to overlook. There is a breezy Lancashire directness about these greetings, as, for example, "What about that new member? Age doesn't matter. No, you're not too young; Pitt was Prime Minister at 23. No, you're not too old; Gladstone was Prime Minister at 83." There are evidently still a few bright boys at the Manchester end.

From the Barter Trading Corporation, 14, Waterloo Place, London, S.W.1, comes a very attractive New Year novelty in the form of a small clock, which might serve equally well the purpose of a travelling clock, a bedroom or boudoir clock, or an office clock. Done in brass and lacquer, it is extremely bright in appearance, and has an alarm attachment that adds to its usefulness. It is enclosed in a neat blue box, which has no more advertisement of its donor than a simple announcement on the back—"For chemicals, solvents, and plasticisers, ask Barter."

Crossley Brothers, Ltd., of Openshaw, send a boldly figured wall calendar, which is useful for quick reference.

The Lea Recorder Co., Ltd., of 28, Deansgate, Manchester, forward their New Year Appointment Calendar, suitable for desk use and showing a week's engagements on each page.

The ring tablet diary for 1929-30, issued by the Anglo-Scottish Chemical Co., Ltd., Glasgow, gives the weekly calendar in page form, with space for notes and appointments, for fifteen months.

The Mammoth Daily Calendar for 1929, issued by the Cambrian Wagon Co., Ltd., Cardiff, is useful for desk purposes, having a separate leaf for each day of the year, with space for engagement notes.

The Staveley Coal and Iron Co., Ltd., near Chesterfield, send a neat leather-bound pocket diary for 1929, with a separate section for notes and memoranda, and a valuable collection of technical information, tables, definitions, and other practical and theoretical data.

An attractive tablet diary, with the calendar conveniently divided into weekly and fortnightly sections, is forwarded by Leistikow, Allison, and Lyon, of 18-19, Southampton Buildings, Chancery Lane, the London agents of A. Borsig, G.M.B.H. of Berlin, who specialise in locomotives, steam power plant, and the usual chemical engineering apparatus.

The quarterly desk calendar, in cheque book form, showing a week at each opening, with complete calendar for the month and space for memoranda, which the *Newspaper World* introduced last year, is one of the most welcome arrivals. It has become a familiar desk companion in many an editorial office during the past year, and we are glad to acknowledge the early receipt of the first quarter's issue for 1929.

The Editor of THE CHEMICAL AGE begs to acknowledge the receipt of, and very cordially to reciprocate, seasonal greetings from Dr. H. E. Howe, editor of *Engineering and Industrial Chemistry*, Washington, D.C., Dr. and Mrs. H. C. Parmelee, New York, Dr. and Mrs. Randall, New York, Mr. Herbert P. Pearson, New York, Mr. Francis M. Turner, jun., president of the Chemical Catalog Co., New York, Mr. G. M. Norman and colleagues, of the Technical Division of the Hercules Powder Co., Wilmington, U.S.A., and many others at home and overseas.

Christmas at the John Benn Hostel

THE real Christmas spirit of gay festivity and active service prevailed at the John Benn Hostel for East End lads, a number of whom had never before enjoyed a real Christmas. Some 60 boys were in the Hostel over the holiday, and together with residents, they went through a programme that left little time for anything but eager activity.

The first corporate act was attendance at early service, and later followed inspection of the "dorms," with attractive prizes for the winners. Christmas dinner was served with full ceremony and not a little fun. It was particularly pleasing that the expenses of the day were materially contributed to by the lads themselves, entirely on their own initiative.

There were useful gifts for all, countless competitions, and the full fun of the typical family party. The staff were responsible for the creation and complete production of the play staged in the Milner Hall, and later, at the sing-song, individual talent among the lads was encouraged. The close of a long day was a short voluntary service which secured a most gratifying attendance.

Boxing Day gave opportunities for further games, sports, and festive meals in which staff and lads gave equally willing service. A happy day closed with an unofficial "rag" in which the staff "were severely mutilated in the best of spirits." There were, however, no casualties, only a great rejoicing at the spirit that pervaded the whole programme and at the realisation of what such a Christmas must have meant to the lads themselves.

Death of Chemical Assistant: Inquest Adjourned

AN inquest on Arthur Leonard Ball, aged 30, of Martin Street, Stratford, London, a chemist's assistant employed in the research department of Woolwich Arsenal for about sixteen months, was adjourned at West Ham on Tuesday for results of a pathological examination and evidence of conditions under which the man was working at the Arsenal. The widow stated that her husband was passed as fit on December 4 for a Territorial unit, but was taken ill the next day, losing the power of his legs. He was able to go to a doctor last Saturday, but on the way home was sick, and died the same afternoon. Dr. Eric Grogono said that, following a communication from the Home Office, he had sent organs from the body to the pathological department of Queen Mary's Hospital, Stratford. Ball's condition was perfectly compatible with poisoning by some compound unknown. The symptoms he had fitted in with poisoning by nitro-glycerine fumes.

The Coroner: You found no trace of the fumes?

Witness: No, I would not expect to find the fumes, but the effect of the fumes. I could not, however, trace any of those effects.

The inquest was then adjourned for a fortnight.

Errata

IN the entry dealing with S. Bornett and Co., Ltd., of 7 and 8, Idol Lane, London, E.C.3, specialists in homogeneous lead lining and filtration plant, in THE CHEMICAL AGE Year Book for 1929, the telephone number and telegraphic address were incorrectly stated. The telephone number should read Royal 1907 (not Central 1907), and the telegraphic address "Acetidine" (not "Aceticlene").

Quality Fertilisers from Poor Phosphates

TWO EMPLOYEES of the Fertiliser Institute, Moscow, are stated to have discovered a new method for the production of concentrated fertilisers from poor phosphates. Fertilisers obtained by this method contain up to 65 per cent. of nutritives, while superphosphates previously produced contained only 14 to 16 per cent.

From Week to Week

SIR ARTHUR DORMAN, who has been indisposed, is progressing favourably.

THE AUSTRIAN FIRM of Rehack and Co., importers of chemicals, oils and benzine is stated to have failed.

ARTIFICIAL SILK NEWS.—Mr. F. T. Carmichael has been appointed a director of the British Enka Artificial Silk Co., in succession to the late Mr. James Carmichael.

THE LECTURE ON "Preparation of Coal for the Market," by Mr. A. Grounds, to the South Wales Section of the S.C.I. has been postponed from January 4 to January 11.

SHAREHOLDERS of Bell's United Asbestos Co., having confirmed the necessary resolutions, the amalgamation between Turner and Newall, Ltd., and Bell's United Asbestos Co., is now accomplished.

A VERDICT OF SUICIDE during temporary insanity was returned at an inquest on Saturday, December 29, on Eli Angel, a silk dyer employed at Courtaulds Mills, Bocking, who was found drowned in the River Blackwater.

MR. BURROWS MOORE, of Monkseaton, Northumberland, late Lecturer in Chemical Engineering at University College, London, has been appointed head of the Research Department of the Thermal Syndicate, Ltd., Wallsend-on-Tyne.

FOUR EMPLOYEES of the I.G.'s Oppau works have been sentenced to periods of imprisonment ranging from five to twelve months for betraying manufacturing secrets to foreigners, including among others an inspector of the French Sûreté.

THE BOARD OF TRADE have appointed Mr. J. Rogers, F.I.C., of the British Dyestuffs Corporation, Ltd., to be a member of the Dyestuffs Industry Development Committee under the Dyestuffs (Import Regulation) Act, 1920, in place of Dr. E. F. Armstrong, F.R.S., resigned.

MR. ALFRED COTTER, of 5, Gloucester Street, Belfast, has been appointed sole agent for Ireland by the Clayton Aniline Co., Ltd., dyestuffs and chemicals manufacturers, of Manchester, and the Society of Chemical Industry in Basle, Switzerland. The appointment took effect as from January 1, 1929.

THE CONSORTIUM in the Spanish cement industry is about to begin work. A few firms have refused to become members. Spanish consumption of cement is 2,000,000 tons a year, of which the consortium produces 1,200,000 tons. It is hoped to render unnecessary within a year the imports of 400,000 tons.

AT THE INQUEST on Monday at Carnforth on William Boak, formerly analyst at Carnforth Ironworks, who was found dead in his cellar the day before, it was stated that he had been worried about unemployment; a verdict that he hanged himself, there being no evidence to show the state of his mind, was returned.

THE SKODA Co. has purchased a large estate in Spain on which to construct a foundry to meet the large Spanish demands for steel. It is stated that the output of the company's foundries at Pilsen is fully taken up, and that, as it is concentrating on the English market in competition with Germany, it is starting a new enterprise abroad so as to have a freer hand.

UNEMPLOYMENT in WIDNES has increased since the amalgamation of the United Alkali Co. with Imperial Chemical Industries, and Lord Melchett, on behalf of the new company, has offered to pay a percentage of the wages allowed to the late employees who are taken on for the new road-improvement schemes. The matter has been placed before the County Council.

THE SWEDISH ECONOMIC REVIEW for the fourth quarter of the year 1928 states that there are no great changes to be noted in the chemico-technical industries. Employment in the artificial manure industry, which was already good, showed a further improvement, in spite of the less favourable position of agriculture. Employment was moderately good at all the match factories, as was the case during the preceding quarter.

FOLLOWING INJURIES received from carbolic acid at the works of the North-Western Tar Distillery, Ltd., Cadishead, Mr. Roy Bracegirdle, a chemist, died in Salford Royal Hospital on December 18. According to evidence at the inquest on Saturday, December 22, Mr. Bracegirdle apparently turned a tap on instead of turning it off, and was sprayed with carbolic acid. Medical evidence showed that he recovered from burns, but died as a result of absorption of carbolic acid. A verdict of accidental death was recorded.

THE INTERNATIONAL CHAMBER OF COMMERCE has just issued its periodical "List of Fairs and Exhibitions" containing full information concerning fairs and exhibitions to be held in 50 countries from January 1 to December 31, 1929. This publication should prove invaluable to manufacturers and merchants, as it contains a detailed index and full information as to the prices of stands, transport, and other facilities granted to exhibitors, the number of exhibitors, visitors, buyers, etc. Further information may be obtained from the Secretariat General of the International Chamber of Commerce, 38, Cours Albert 1er, Paris, VIIIe.

CAPTAIN OLIVER LYTTTELTON, general manager of the British Metal Corporation, has been appointed to represent non-ferrous metals on the Board of Trade Advisory Council.

AT A LECTURE on "Chemical Warfare," at Auchterarder on Wednesday, December 26, Professor J. S. Haldane, F.R.S., expressed the view that the dangers of gas attack from the air were to a certain extent exaggerated.

SIR CECIL L. BUDD has relinquished the office of managing director of the British Metal Corporation, Ltd. He will retain his seat on the board, and will continue to act as chairman of the management committee.

IT IS ANNOUNCED that in addition to the reconstitution of the Salt Manufacturers' Association for another year on a new basis, negotiations are well advanced for the completion of the merging of the principal salt-producing concerns outside the Salt Union.

IT IS NOW announced that plans for the final reconstruction of Sir W. G. Armstrong Whitworth and Co. are well advanced, and that in all probability a scheme will be laid before all classes of debenture holders, note holders and shareholders in the near future.

BEEET SUGAR NEWS.—The Second Lincolnshire Beet Sugar Co. has decided to attach a sugar refinery to the existing factory at Brigg, at a cost of £70,000 to £80,000.—An extension to the factory of the Yorkshire Sugar Co., Ltd., at Selby, is contemplated, and will probably cost about £36,000.

AT A RECENT MEETING of the Tanners' Council of the United States, Mr. Moffatt announced that as a result of work carried out at the research laboratory of the Council very important results had been obtained regarding the use of methylamine as a dehairing agent. These will shortly be published.

WITH REGARD to references made to the Standing Committee of the Board of Trade under the Merchandise Marks Act, 1926, in respect of imported spring balances of all descriptions the Board gives notice that a report has been made by the Committee and may be purchased from H.M. Stationery Office.

L. AND N. COAL DISTILLATION, LTD., is engaged in negotiations for the formation of a company in the Forest of Dean district for the development of a colliery and the erection of a coal distillation unit. A further development is the acquisition of an interest in the Patart process of producing synthetic alcohol from "L and N" fuel.

MR. A. A. DRUMMOND'S ARTICLE on "Synthetic Resins: A Year's Progress," published last week in the Annual Review Number of THE CHEMICAL AGE, unfortunately contained a printer's error. In the section dealing with resins from chlorinated *p*-cymene, it was stated that these had the dielectric strength "20,000 volts/mil." This should have read "20,000 volts/mm."

THE FIRST MEETING of the Commission appointed to inquire into the explosions which occurred in the Holborn area on December 20 and 21, was held at Westminster County Hall on Saturday, December 29. Mr. R. G. Hetherington, Deputy Chief Engineering Inspector of the Ministry of Health, chairman of the Commission, stated that the Government had placed at their disposal the services of Professor R. V. Wheeler, Director of Explosives Research to the Ministry of Mines.

THE ONLY POLISH factory manufacturing calcium cyanamid, located in Chorzow, Upper Silesia, an independent Government owned enterprise, produced 114,168 metric tons of calcium cyanamid during the first three quarters of 1928 which, computed in terms of pure nitrogen, amounts to 25,127 metric tons. Of the total production, 10,256 tons of calcium cyanamid (in terms of pure nitrogen, 2,261 tons) were used by this factory for the manufacture of ammonium hydroxide.

JOHN J. GRIFFIN AND SONS, LTD., Kemble Street, Kingsway, London, W.C.2, makers of physical and scientific instruments, chemical apparatus, etc., announce that their business has been carried on as from December 15, 1928, in the name of "Griffin and Tatlock, Ltd.," combining their business and that hitherto carried on by Baird and Tatlock, Ltd., of Glasgow, Manchester, Edinburgh, and Liverpool, with which company J. J. Griffin and Sons have acted in the closest association for some years. The conduct of the business will be continuous and unchanged.

RECENT WILLS INCLUDE: Mr. John H. Plummer, of Southport, who is stated to have left the whole amount of his estate on trust for the endowment of chairs for modern scientific research at Cambridge. The sum is thought to be in the neighbourhood of £250,000.—Mr. Edmund White, a director of Hopkin and Williams, Ltd., and president of the Pharmaceutical Society, £20,450 (net personalty (£19,948)).—Mr. S. M. Gluckstein, who instituted the research laboratories of J. Lyons and Co., Ltd., £56,696 (net personalty £57,071).—Mr. D. J. P. Berridge left £130 to the Old Malvernian Society for the provision of an annual chemistry prize at Malvern College.—Mr. H. Marsh, head of the book-keeping department of Imperial Chemical Industries, Ltd., at Winnington works, £9,204 (net personalty £9,079).

References to Current Literature

British

- GENERAL.**—A rapid method for the approximate determination of the sorption isothermals of vapours on charcoal. I.—The principle of the method. A. J. Allmand and J. E. Manning. *J.S.C.I.*, December 28, pp. 369-372. II.—A working description of the simple retentivity test. A. J. Allmand and L. J. Burrage. *Ibid.*, pp. 372-376. "Titanium cyanonitride" and the titanium oxychlorides. E. A. Rudge and F. Arnall. *J.S.C.I.*, December 28, pp. 276-380. **OILS, FATS, ETC.**—The determination of unsaponifiable matter in oils and fats. E. L. Smith. *Analyst*, December, pp. 632-641. The composition of Irish butter. The distribution of the volatile acid groups among the glycerides of butter fat. P. Arup. *Analyst*, December, pp. 641-644. **PATENTS.**—Protection of inventions in Soviet Russia. B. Monsaroff. *Canadian Chem. and Met.*, December, pp. 342-343. **SEWAGE.**—The causes and prevention of hydrogen sulphide in abattoir sewage. A. B. Porter and J. A. Cresswick. *J.S.C.I.*, December 28, pp. 380-382.

United States

- ANALYSIS.**—The determination of morphine. A. K. Balls and W. A. Wolff. *J. Biol. Chem.*, December, pp. 379-401. A series of methods for estimating morphine is proposed, for the purpose of avoiding the errors in the methods of determination now in use. The volatility with steam of water-soluble organic substances. A. I. Virtanen and L. Pulkki. *J. Amer. Chem. Soc.*, December, pp. 3138-3151. The steam distillation of steam-volatile water-soluble substances is a means of determining their purity. By distillation, volatile substances can be determined very accurately. Apparatus for micro gas analysis. C. H. Prescott, Jr. *J. Amer. Chem. Soc.*, December, pp. 3237-3240. The use of potassium iodate in back titration for the determination of the hypochlorite content of solutions. J. R. Lewis and R. F. Klockow. *J. Amer. Chem. Soc.*, December, pp. 3243-3244. Hypochlorite was determined by reducing, with an excess of arsenite, thiosulphate or iodide, and titrating the excess with iodate. A highly accurate method for the analysis of urea. M. Taylor. *J. Amer. Chem. Soc.*, December, pp. 3261-3265. The urea is digested with acid under pressure in an autoclave, being converted to ammonium chloride and carbon dioxide. The accuracy of the method is 0.02 per cent. **GENERAL.**—Starch hydrolysis as affected by polarised light. A. E. Navez and B. B. Rubenstein. *J. Biol. Chem.*, December, pp. 503-513. With regard to the effect of radiation on the starch-diastase system it is found that ordinary light and polarised light, of the same intensity and as closely as possible similar in spectral composition, have the same effect. Light falling on the starch-diastase system increases the rate of hydrolysis over that of the same reaction in the dark. **ORGANIC.**—The action of pyridine as a catalyst in Perkin's synthesis of cinnamic acid. G. Bacharach and F. Brogan. *J. Amer. Chem. Soc.*, December, pp. 3333-3334. Yields of cinnamic acid are increased to 85 per cent. by the addition of a little pyridine as catalyst. Preparation of some substituted guanidines. F. Bischoff. *J. Biol. Chem.*, December, pp. 345-355. The preparation of diguanilpiperazine, guanil-*p*-aminodimethylaniline, and diguanido-octamethylene is described, and a new method for preparing diguanido-pentamethylene is given. The biuret reaction. I.—The biuret reaction of acid imides of the barbituric acid type. M. M. Rising and C. A. Johnson. *J. Biol. Chem.*, December, pp. 709-722.

German

- ANALYSIS.**—Two new methods for the determination of phenol in effluents. H. Dehe. *Chemiker-Zeitung*, December 19, pp. 982-985.

The determination of lead by means of *o*-hydroxyquinoline. V. Marsson and L. W. Haase. *Chemiker-Zeitung*, December 22, pp. 993-995.

APPARATUS.—Standard ground apparatus. J. Friederichs. *Chemische Fabrik*, December 26, pp. 725-726.

A movable electric stirrer. E. Ziehl. *Chemische Fabrik*, December 26, p. 729.

New investigations on the mode of operation of high-percentage spirit distillation apparatus. E. Lühder and W. Kilp. *Chemische Fabrik*, December 19, pp. 713-715; December 26, pp. 726-727.

Apparatus for the storage and circulation of gases. F. Petzold. *Chemische Fabrik*, December 19, pp. 716-717.

The manipulation of Engler's viscometer. S. Erk. *Chemiker-Zeitung*, December 22, p. 995.

COPPER.—The electrolytic refining of copper. I and II.—F. Chemnitz. *Chemiker-Zeitung*, December 19, pp. 981-983; December 26, pp. 1002-1003.

An atomiser for flame-coloration. H. Emde. *Chemiker-Zeitung*, December 26, p. 1003.

FERMENTATION.—The mechanism of oxidation processes. XV.—The nature of the acetic acid fermentation. H. Wieland and A. Bertho. *Annalen der Chem.*, Vol. 467, Part 2, pp. 95-158.

GENERAL.—Recent work on the hydroxides of tri- and quadrivalent elements. F. Adickes. *Zeitschrift angewandte Chem.*, December 22, pp. 1333-1336.

The determination of adsorptive power in the decolorisation of oils by bleaching earths. A. Wiberg. *Zeitschrift angewandte Chem.*, December 22, pp. 1338-1342.

Compounds of alkali phosphates with hydrogen peroxide. H. Menzel and C. Gebler. *Zeitschrift anorganische Chem.*, Vol. 177, Parts 2-3, pp. 187-213. The compounds $\text{Na}_2\text{HPO}_4 \cdot 2\text{H}_2\text{O}_2$; $\text{K}_2\text{HPO}_4 \cdot 2.5\text{H}_2\text{O}_2$; $\text{KH}_2\text{PO}_4 \cdot \text{H}_2\text{O}_2$; and $\text{KH}_2\text{PO}_4 \cdot 1.25\text{H}_2\text{O}_2$ have been isolated, of which the first two are fairly stable.

The behaviour of hydrogen peroxide in aqueous solutions of alkali phosphates. S. Husain. *Zeitschrift anorganische Chem.*, Vol. 177, Parts 2-3, pp. 215-226.

Blau gas. *Chemiker-Zeitung*, December 26, pp. 1001-1002. This gas (consisting of ethylene, etc.) is used as an airship fuel.

PLANT.—The Mawald-Wälz piston pump. K. Klemm. *Chemiker-Zeitung*, December 19, pp. 985-986.

Miscellaneous

GENERAL.—The preparation of manganates and permanganates. E. Geay. *Revue Chim. Industrielle*, July, pp. 214-217; October, pp. 318-321; November, pp. 349-354 (in French).

NITROCELLULOSE PRODUCTS.—Nitrocellulose paints and lacquers. Renestrat. *Revue Chim. Industrielle*, October, pp. 314-318; November, pp. 346-349 (in French).

ORGANIC.—Some factors influencing the yields of tertiary butyl magnesium chloride and tertiary amyl magnesium chloride, and the preparation of acids obtained from them and carbon dioxide. H. Gilman and E. A. Lee-Iner. *Recueil Travaux Chimiques Pays-Bas*, December 15, pp. 1058-1063 (in English). Satisfactory methods for the preparation of these Grignard compounds and of trimethyl- and dimethylethyl-acetic acid have been worked out.

Derivatives of β -methylanthracene obtained with oxalyl chloride. D. Butescu. *Bulletin Société Chim. France*, November, pp. 1269-1272 (in French).

The catalytic condensation at high temperatures of cyclohexanone and cyclohexene. A. D. Petroff. *Bulletin Société Chim. France*, November, pp. 1272-1276 (in French).

Researches on the derivatives of aminomethylhydroxyanthraquinones and of dihydroxydianthraquinonyl-ethylenes. H. de Diesbach and P. Gubser. *Helvetica Chimica Acta*, Vol. XI, Part 6, pp. 1098-1125 (in French).

Investigations on carbazol derivatives. I.—F. Kehrman and F. Zweifel. *Helvetica Chimica Acta*, Vol. XI, Part 6, pp. 1213-1219 (in German).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

- 301,232. NITRIC AND SULPHURIC ACID, MANUFACTURE OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt. Ges., Frankfort-on-Main, Germany. Application date, January 16, 1928.

Nitric acid and sulphuric acid are produced simultaneously by passing a mixture of gases containing ammonia and sulphur oxides or hydrogen sulphide, *e.g.*, gases obtained in the washing of industrial gases, together with oxygen, over oxidising catalysts at a temperature of 500–850° C. The products contain oxides of nitrogen and sulphur, which may be further oxidised to nitrogen dioxide and sulphur trioxide. Alternatively, the gaseous products are passed into a scrubbing tower fed with nitrosylsulphuric acid, by which concentrated sulphuric acid is obtained as well as nitrogen oxides.

In an example, a mixture of ammonium sulphite 85 per cent., and ammonium sulphate 15 per cent., obtained by purifying

the decomposer 18 is given. Another example is given of the treatment of washing liquors from gas purifiers for gases obtained by dry distillation of coal.

- 301,401. N-AMINO ALKYLATION OF AMINES, PROCESS FOR. W. Carpmal, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 24, 1927.

Salts of sulphonic acid esters of amino-alcohols are treated with amines or their substitution products. An agent combining with the acid and a solvent may be present. Examples are given of the treatment of the hydrochloride of the *p*-toluene-sulphonic-acid-ester of α -diethyl-amino- δ -pentanol with aniline, and the hydrochloride of γ -*p*-toluene-sulphonic-acid-ester of α -piperidyl- β - γ -dihydroxy-propane with 8-amino-quinoline

- 301,402. UNSATURATED ALIPHATIC HYDROCARBONS, MANUFACTURE OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 27, 1927.

Aliphatic hydrocarbons containing at least two carbon atoms in the molecule, or mixtures of such hydrocarbons, of low or medium boiling point such as benzene are heated in gaseous or vapour phase to obtain a product consisting substantially of unsaturated aliphatic hydrocarbons having the same number of carbon atoms in the molecule, and the yield is considerably increased by the presence of active charcoal as a catalyst. The charcoal may be impregnated with metals or metal compounds. Other suitable catalysts are composed of or prepared from metal compounds with organic substances, *e.g.*, by heating iron or zinc humate in the absence of oxygen. The process is applicable to aliphatic hydrocarbons obtained by destructive hydrogenation of coal, mineral oils, etc. The resulting olefines may be polymerised into substances resembling rubber.

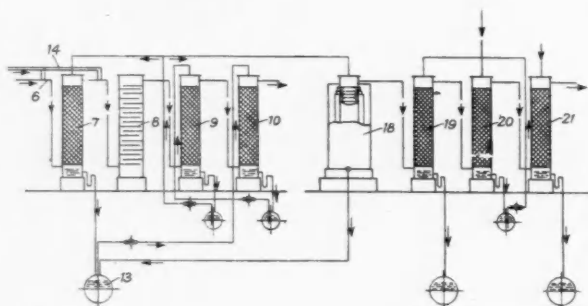
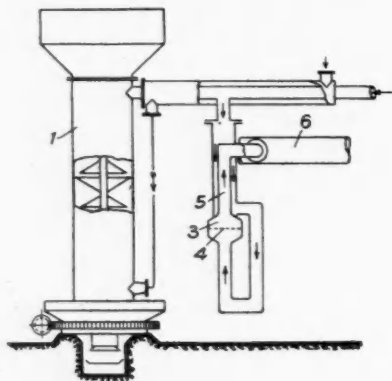
- 301,403. DIBENZANTHRONE, PRODUCTION OF. I. B. Anderson, R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Earls Road, Grangemouth, Stirling. Application date, July 22, 1927.

Specification No. 251,313 (see THE CHEMICAL AGE, Vol. XIV, p. 550) describes the production of dibenzanthrone by alkali fusion of the dibenzanthronyl obtained by treating benzanthrone in sulphuric acid solution with manganese dioxide. In this invention Bzl-Bzl'-dibenzanthronyl is employed with an indifferent solvent such as benzene, petroleum, or xylene, as a diluent or suspending agent, and caustic potash and an alcohol as the condensing agent, the temperature being 15–130° C. The solvent is removed by steam distillation, and the dibenzanthrone in quantitative yield is obtained. Examples are given of the treatment of Bzl-Bzl'-dibenzanthronyl in various solvents with caustic potash and alcohols.

- 301,523. ESTERS, PRODUCTION OF. Imperial Chemical Industries, Ltd., Broadway Building, 50–60, Broadway, Westminster, S.W.1, and G. F. Horsley, "Holmdene," Highfield, Eaglescliff, Durham. Application date, August 3, 1927.

Alcohol, acid, and water are supplied to an esterification apparatus in such proportions as to enable substantially all the ester to be continuously eliminated in the form of a low-boiling ternary azeotropic vapour consisting of ester, water, and alcohol, with traces of acid. In the usual practice, the conditions are such that the concentrations of the reacting substances are as large as possible, while the concentrations of the products are kept low by continuous distillation. In this invention, the ester and water are removed continuously in the form of a ternary azeotropic mixture, and at the same time water with or without ester is added to permit the formation of the ternary azeotropic vapour.

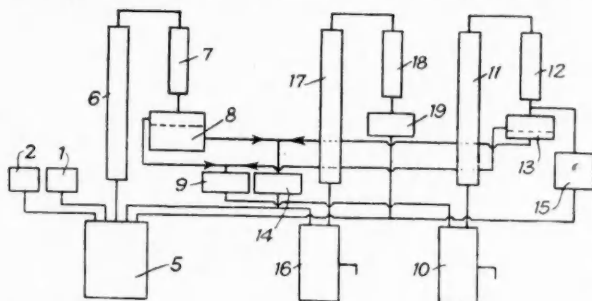
In the application to the production of isobutyl acetate, isobutyl alcohol and acetic acid are supplied from tanks 1, 2 to the esterification vessel 5 with sufficient water from other



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illuminating gas, is decomposed at 130–150° C. in a tower 1 by means of a current of hot air. The resulting gases contain about 8 per cent. of ammonia, and are passed into a combustion chamber 3 from which hot gases are drawn off through pipe 5 to heat the incoming gases to 300–400° C. The ammonia is oxidised to nitrogen oxide by a catalyst 4 of platinum gauze, and the products pass through pipes 5, 6 into an absorption tower 7 in counter-current to nitrosyl-sulphuric acid. The latter is decomposed, and the sulphur dioxide is converted into trioxide and absorbed in the sulphuric acid, which is collected in a tank 13. The gases pass to an oxidation chamber 8, fed with water, steam, or dilute sulphuric acid, and also oxygen through pipe 14. Nitrogen dioxide is formed, and is extracted by concentrated sulphuric acid in towers 9, 10. Some of this acid is supplied to tower 7, and the remainder passed to a decomposer 18, where it is heated to obtain pure concentrated sulphuric acid. The liberated nitrogen oxides are treated with dilute nitric acid in towers 19, 20 to obtain concentrated nitric acid, and residual nitrogen oxides are absorbed by alkali in a tower 21. A detailed description of

parts of the plant to permit the formation of the azeotropic vapour. The azeotropic mixture boils at about 87° C., and consists of isobutyl acetate 57.2 per cent., isobutyl alcohol 20.2 per cent., and water 22.6 per cent. The vapours are dephlegmated in a column 6 which returns any acetic acid vapour, and the condensate contained in the condenser 7 passes to a vessel 8. The liquid in this vessel separates into two layers, the upper layer containing 80 per cent. of the condensate and including practically the whole of the ester, while the lower layer contains 20 per cent. of the condensate including the bulk of the water. These two layers pass to



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vessels 9, 14 for recovery of the ester and alcohol. Liquid from the vessel 9 passes to a still 10 having a dephlegmator 11 and condenser 12. The condensate in vessel 13 separates into two layers, the upper of which is returned to vessel 9 and the lower to vessel 14. When all the water has been expelled from still 10 the binary vapour of isobutyl alcohol and isobutyl ester is distilled to remove all the alcohol. The vapours are dephlegmated, condensed, and separated in a vessel 15. The lower layer from 8 is distilled in 16, and the vapours are dephlegmated in 17, condensed in 18, and the condensate collected in 19 is returned to still 5. Pure water is collected in 16, and part of the liquid in 14 may be returned to the still 5 to make up the necessary water. Another apparatus is also described.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—275,271 (I.G. Farbenindustrie Akt.-Ges.) relating to amidated sulphurised benzanthrone derivatives, see Vol. XVII, p. 331; 275,273 (F. Gulkar) relating to hydrogen, see Vol. XVII, p. 331; 276,658 (Aktiebolaget Separator-Nobel) relating to separation of paraffins from oils, see Vol. XVII, p. 399; 276,687 (Gewerkschaft der Steinkohlenzeche Mont Cenis) relating to purification of hydrogen, see Vol. XVII, p. 419; 277,974, 279,055 and 279,410 (A. L. H. Spilker, C. Zerbe, and Ges. für Teerverwertung) relating to splitting of hydrocarbons, etc., see Vol. XVII, pp. 496, 557 and 579; 279,136 (I.G. Farbenindustrie Akt.-Ges.) relating to aromatic mercaptans, see Vol. XVII, p. 578; 283,105 (I.G. Farbenindustrie Akt.-Ges.) relating to hydrocarbons poor in hydrogen, see Vol. XVIII, p. 225; 283,927 (T. Goldschmidt Akt.-Ges.) relating to aluminium alloys, see Vol. XVIII, p. 31 (Metallurgical Section); 288,253 (Metallbank und Metallurgische Ges. Akt.-Ges.) relating to anhydrous zinc chloride, see Vol. XVIII, p. 535; 288,579 (Siemens and Halske Akt.-Ges.) relating to iron-beryllium alloys, see Vol. XIX, p. 15 (Metallurgical Section); 290,229 (I.G. Farbenindustrie Akt.-Ges.) relating to 6-chloro-2-amino-1-methylbenzene-sulphonic acids, see Vol. XIX, p. 35; 295,050 (Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Reunies Etablissements Kuhlmann) relating to diazo compound and dyestuffs therefrom, see Vol. XIX, p. 347; 298,084 (I.G. Farbenindustrie Akt.-Ges.) relating to 1:1:2-trichlorethane, see Vol. XIX, p. 543.

International Specifications not yet Accepted

299,720. ACETONE. Consortium für Elektrochemische Industrie Ges., 20, Zielstattstrasse, Munich, Germany. International Convention date, October 29, 1927.

Acetic acid vapour is passed over cerium compounds at such a speed that only part of the acid is converted into acetone, the remainder being separated and returned to the process.

The decomposition may be effected in the presence of steam, carbon dioxide, or nitrogen.

299,721. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 29, 1927.

A sulphonc, nitrosulphonc, aminosulphonc, or sulphamic acid of naphthalic anhydride is treated with ammonia or an aliphatic or aromatic amine to obtain acid wool dyes. The dyes can also be obtained by treating naphthalic anhydride or its derivatives with ammonia or an aliphatic or aromatic amine, and converting the product into the sulphonc or sulphamic acid. Alternatively, naphthalic anhydride or its derivatives may be treated with sulphonated amines. A number of examples are given.

299,722. CHLORACETALDEHYDE. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 28, 1927. Addition to 299,319. (See THE CHEMICAL AGE, Vol. XIX, p. 640.)

Chloroacetaldehyde is separated from aqueous hydrochloric acid in a single distillation by previously increasing the concentration of hydrochloric acid to 20 per cent. by passing gaseous hydrochloric acid into it, or by adding fuming hydrochloric acid, or sodium chloride and sulphuric acid.

299,763. ALKALI SILICATES. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 31, 1927.

Water glass is obtained by heating under pressure siliceous raw material and liquor obtained by electrolysis sodium or potassium chloride solutions.

299,765. PURIFYING GAS. C. J. Hansen, 33, Trappenbergstrasse, Essen, Germany. (Assignee of H. Koppers Akt.-Ges., 948, Postfach, Essen, Germany.) International Convention date, October 31, 1927. Addition to 299,302. (See THE CHEMICAL AGE, Vol. XIX, p. 640.)

Ammonia and sulphuretted hydrogen are removed from gas by a solution of iron thiosulphate, which is then regenerated with sulphurous acid. Ammonia from the condensed liquor may be added to the washing liquor.

299,791. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, October 31, 1927.

A diazo compound of the benzene or naphthalene series is coupled with a further diazotisable component of the benzene or naphthalene series, rediazotised, coupled with a further diazotisable component, rediazotised, and coupled with 1:5:7-aminonaphthol-sulphonic acid in an acid, neutral, or alkaline medium. The products are direct dyes for cotton, and examples are given.

LATEST NOTIFICATIONS.

302,268. Process for concentrating volatile aliphatic acids. Holzverkohlungs-Industrie Akt.-Ges. December 13, 1927.

302,269. Process for concentrating volatile aliphatic acids. Holzverkohlungs-Industrie Akt.-Ges. December 13, 1927.

302,337. Anaesthetics. I.G. Farbenindustrie Akt.-Ges. December 16, 1927.

302,226. Manufacture of preparations having a tuberculin action. I.G. Farbenindustrie Akt.-Ges. December 12, 1927.

302,574. Process of employing cerium in the production of steel and iron. I.G. Farbenindustrie Akt.-Ges. December 17, 1927.

302,354. Process of obtaining light hydrocarbons from complex organic compounds by hydrogenation. Florentin, J. M. F. D., and Kling, A. J. December 15, 1927.

302,280. Manufacture of dope material for producing non-transparent coatings. I.G. Farbenindustrie Akt.-Ges. December 13, 1927.

302,251. Manufacture of azo-dyestuffs. I.G. Farbenindustrie Akt.-Ges. December 12, 1927.

302,321. Manufacture of trichlorethylene. Consortium für Elektro-Chemische Industrie Ges. December 14, 1927.

302,369. Photographic roll-films. I.G. Farbenindustrie Akt.-Ges. December 16, 1927.

302,588. Adhesive paper or fabric. I.G. Farbenindustrie Akt.-Ges. December 17, 1927.

302,599. Manufacture of azo-dyestuffs insoluble in water. I.G. Farbenindustrie Akt.-Ges. December 17, 1927.

302,600. Manufacture of azo-dyestuffs insoluble in water. I.G. Farbenindustrie Akt.-Ges. December 17, 1927.

302,601. Manufacture of azo-dyestuffs insoluble in water. I.G. Farbenindustrie Akt.-Ges. December 17, 1927.

Specifications Accepted with Date of Application

- 273,684. Condensation products from *m*- and *p*-cresol and aliphatic ketones, Process for the manufacture of. Chemische Fabrik auf Actien (vorm. E. Schering). June 29, 1926.
- 273,686. Alkylisopropylene-phenols and alkylated cumaranes Process for the manufacture of. Chemische Fabrik auf Actien (vorm. E. Schering). June 29, 1926.
- 274,439. Alkylated phenols and their hydrogenated products, Process for the manufacture of. Chemische Fabrik auf Actien (vorm. E. Schering). July 14, 1926. Addition to 254,753.
- 275,636. Condensation products of the anthraquinone series, Manufacture of. I.G. Farbenindustrie Akt.-Ges. August 4, 1926.
- 276,010. Thymol, its isomers or homologues, and their hydrogenation products, Process for the manufacture of. Chemische Fabrik auf Actien (vorm. E. Schering). August 16, 1926.
- 279,072. Destructive hydrogenation of coal, tars, mineral oils and the like. I.G. Farbenindustrie Akt.-Ges. October 14, 1926. Addition to 254,713.
- 279,855. Alkylisopropylphenols and their hydrogenation products, Process for. Schering Kahlbaum Akt.-Ges. October 26, 1926. Addition to 273,685.
- 282,004. Anthraquinone derivatives, Manufacture of. I.G. Farbenindustrie Akt.-Ges. December 9, 1926.
- 283,931. Magnetic alloys. H. F. Porter. January 20, 1927.
- 288,572. Diazo compound and dyestuffs derived therefrom, Manufacture of. Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Reunies Etablissements Kuhlmann. April 12, 1927.
- 293,040. Sodium-nitrogen compounds, Process of preparing. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler. July 1, 1927.
- 298,599. Dissociating sulphur vapour. I.G. Farbenindustrie Akt.-Ges., October 12, 1927.
- 302,191. Ethers of carbohydrates, Manufacture of. O. Y. Imray. (I.G. Farbenindustrie Akt.-Ges.). August 9, 1927.
- 302,211. Cracking hydrocarbon oils, Process and apparatus for. C. Arnold (Standard Development Co.). September 12, 1927.
- 302,212. *N*- ω -aminoalkylamino-naphthalene-carboxylic acids, Process for the manufacture of. I.G. Farbenindustrie Akt.-Ges. and W. Hentrich. September 12, 1927. Addition to 230,457.
- 302,394. Magnetic alloys. W. S. Smith, H. J. Garnett and J. A. Holden. September 16, 1927.
- 302,411. Esters, Production of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.). September 22, 1927.
- 302,415. Conversion of hydrocarbon oils into lighter oils. C. Arnold. (Standard Development Co.). September 22, 1927.
- 302,440. Aluminium alloy, Production of. D. R. Tullis. October 12, 1927.
- 302,489. Brown vat dyestuffs, Manufacture of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) December 5, 1927. Addition to 289,980.
- 302,490. Electrodes for indication and determination of the chemical composition of liquids. H. S. Hatfield. December 5, 1927.
- 302,515. Acetaldehyde, Production of. H. S. Hirst and Imperial Chemical Industries, Ltd. January 25, 1928.
- 302,253. Hydrocarbons, Production of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) June 9, 1927.

Applications for Patents

- British Cyanides Co., Ltd., Manufacture of artificial resins. 37,972 December 22.
- Carbide and Carbon Chemicals Corporation. Lacquer, etc. thinners. 37,858. December 21. (United States, January 27.)
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of alkylamine derivatives of organic compounds. 37,293. December 17.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Insecticides 37,509. December 19.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of ethers of carbohydrates. 37,510, 37,512. December 19.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Treating seed and grain. 37,511. December 19.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of alkyl thiolic benzyl halides. 37,513. December 19.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Protecting wool, etc., against textile pests. 37,697. December 20.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of synthetic rubber. 37,698. December 20.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphur dyestuffs. 37,822. December 21.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of chlorinated naphthalene compounds. 37,823. December 21.
- Hinchley, J. W. Bleaching molasses by electrolytic treatment. 37,193. December 17.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of condensation products containing nitrogen and sulphur. 37,230. December 17.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of synthetic rubber. 37,231. December 17.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of derivatives of pyranthrone. 37,232. December 17.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of valuable vat dyestuffs. 37,233. December 17.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of vat dyestuffs. 37,234. December 17.
- I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Process for improving lead. 37,397. December 18.
- I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Dyeing. 37,522. December 19.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Apparatus for feeding combustible dust into receptacles. 37,527. December 19.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of carbon black. 37,528. December 19.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of vat dyestuffs. 37,529. December 19.
- I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of bromine-substituted aryl-*l*-thioglycolic acids. 37,646. December 20.
- I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of cellulose lacquers of low viscosity. 37,778. December 21.
- I.G. Farbenindustrie Akt.-Ges. Transferring veining, etc., of wood to printing plates, etc. 37,924. December 12.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of motor fuels. 37,925. December 12.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of glutinous products. 37,926. December 22.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of anthanthrone derivatives. 37,927. December 22.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs insoluble in water. 37,253, 37,254, 37,255. December 17. (Germany, December 17, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of alkylamino-alkylamino derivatives of aromatic compounds. 37,290, 37,291. December 17. (June 23, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Production of alkali metal nitrates. 37,390. December 18. (Germany, December 31, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Rendering soluble compounds insoluble, etc., in water. 37,523. December 19. (Germany, December 19, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of films, etc., from cellulose derivatives. 37,524. December 19. (December 19, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Casting magnesium, etc.. 37,525. December 19.
- I.G. Farbenindustrie Akt.-Ges. Preserving wood. 37,647. December 20. (Germany, December 20, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of synthetic rubber. 37,696. December 20. (Germany, December 21, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of acid-wool dyestuffs. 37,807. December 21. (Germany, December 23, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Process of rendering soluble compounds insoluble in water. 37,969. December 22. (Germany, December 23, 1927.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of organic bases. 37,970. December 22. (Germany, December 23, 1927.)
- Imperial Chemical Industries, Ltd. Concentrated acetic acid. 37,351. December 18.
- Imperial Chemical Industries, Ltd. Printing materials made from cellulose esters, etc. 37,546. December 19.
- Imperial Chemical Industries, Ltd. Finishing leather, etc. 37,875. December 21.
- International Sugar and Alcohol Co., Ltd. (Soc. Industrielle de la Cellulose). Separation of carbohydrates and acids. 37,795. December 21.
- Jones, F. W. Sefton- and Lonza Elektrizitätswerke und Chemische Fabriken Akt.-Ges. Production of calcium formate. 37,943. December 22.
- Jones, H. E. Method of obtaining ammonia. 37,473. December 19.
- Kaffier, H. Carrying out catalytic hydrogenation. 37,418. December 18. (Germany, December 23, 1927.)
- Kritchevsky, W. Dyes. 37,960. December 22.
- Midland Coal Products, Ltd. Cracking, etc., hydrocarbons. 37,480. December 19.
- Pickard, J. A. Filters. 37,583, 37,584. December 19.
- Rowell, S. W. Concentrated acetic acid. 37,351. December 18.
- Soc. Anon. Distilleries des Deux-Sevres. Separation of anhydrous acetic acid. 37,798. December 21. (France, August 17.)
- Soc. des Usines Chimiques Rhone-Poulenc. Manufacture of phenyl-methylaminopropanol. 37,973. December 22. (France, December 23, 1927.)
- Soc. of Chemical Industry in Basle. Manufacture of artificial resins. 37,806. December 21. (Switzerland, December 21, 1927.)
- Wilderman, M. Manufacture of filters. 37,634, 37,635. December 20.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.
ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags carriage paid any station in Great Britain.)
CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall., pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised, 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE.—4½d. per lb.
POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
SODIUM BICHROMATE.—3½d. per lb.
SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
SODIUM CHLORATE.—2½d. per lb.
SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. per gall. 1929—1s. 11d. per gall.
ACID CRESYLIC 99/100.—2s. 5d. to 3s. per gall. 97/99.—2s. 2d. to 2s. 3d. per gall. Pale, 95%, 1s. 11d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d.
ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £5 per ton.
ANTHRACENE OIL, STRAINED.—7½d. to 8d. per gall. Unstrained, 7½d. to 7¾d. per gall.
BENZOLE.—Prices at works: Crude, 10d. to 10½d. per gall.; Standard Motor, 1s. 4d. to 1s. 4½d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.
TOLUOLE.—90%, 1s. 5d. to 1s. 10d. per gall. Firm. Pure, 1s. 10d. to 2s. 1d. per gall.
XVLOL.—1s. 3d. to 1s. 11d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.
CREOSOTE.—Cresylic, 20/24%, 8½d. per gall.; Heavy, 7d. to 7½d. per gall. Middle oil, 5½d. to 6½d. per gall. Standard specification, 5½d. to 5¾d. per gall. ex works. Salty, 7½d. per gall.
NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent 90/160, 1s. 1½d. to 1s. 2½d. per gall. Solvent 95/160, 1s. 2d. to 1s. 6d. per gall. Solvent 90/190, 11d. to 1s. 3d. per gall.
NAPHTHALENE, CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.
NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.
PITCH.—Medium soft, 35s. to 37s. 6d. per ton, f.o.b., according to district. Nominal.
PYRIDINE.—90/140, 4s. 3d. to 6s. 6d. per gall. 90/180, 2s. 3d. to 3s. per gal. Heavy, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. per lb. 100 %.
ACID BENZOIC.—1s. 8½d. per lb.
ACID GAMMA.—4s. 6d. per lb.
ACID H.—3s. per lb.
ACID NAPHTHIONIC.—1s. 6d. per lb.
ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
ACID SULPHANILIC.—8½d. per lb.
ANILINE OIL.—8d. per lb. naked at works.
ANILINE SALTS.—8d. per lb. naked at works.
BENZALDEHYDE.—2s. 3d. per lb.
BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
BENZOIC ACID.—1s. 8½d. per lb.
o-CRESOL 29/31° C.—5½d. per lb.
m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.
p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.
DICHLORANILINE.—2s. per lb.
DIMETHYLANILINE.—1s. 11d. per lb.
DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.
DINITROCHLOROBENZENE.—£84 per ton d/d.
DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
DIPHENYLAMINE.—2s. 10d. per lb. d/d.
a-NAPHTHOL.—2s. per lb. d/d.
B-NAPHTHOL.—10d. per lb. d/d.
a-NAPHTHYLAMINE.—1s. 3d. per lb.
B-NAPHTHYLAMINE.—3s. per lb.
o-NITRANILINE.—5s. 9d. per lb.
m-NITRANILINE.—3s. per lb. d/d.
p-NITRANILINE.—1s. 8d. per lb.
NITROBENZENE.—6d. per lb. naked at works.
NITRONAPHTHALENE.—1s. 3d. per lb.
R. SALT.—2s. 2d. per lb.
SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
o-TOLUIDINE.—8d. per lb.
p-TOLUIDINE.—1s. 10d. per lb. naked at works.
m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.
N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 to £10 per ton. Good demand.
 Grey, £16 10s. per ton. Liquor, 9d. per gall.
CHARCOAL.—£5 15s. to £8 10s. per ton, according to grade and locality.
IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.
RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.
WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
WOOD NAPHTHA, MISCIBLE.—2s. 11d. to 3s. 1d. per gall. Solvent, 4s. per gall.
WOOD TAR.—£3 to £4 per ton.
BROWN SUGAR OF LEAD.—£39 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
BARYTES.—£2 16s. 10d. to £3 10s. per ton, according to quality.
CADMIUM SULPHIDE.—5s. to 6s. per lb.
CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.
CARBON BLACK.—5½d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity, drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—3s. 9d. per lb.
INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4½d. to 5½d. per lb.
LAMP BLACK.—£32 10s. per ton, barrels free.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPHONE, 30%.—£22 10s. per ton.
MINERAL RUBBER "RUBFRON."—£13 12s. 6d. per ton, f.o.r. London.
SULPHUR.—£9 to £11 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton.
THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.
THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
VERMILION, PALE OR DEEP.—6s. 10d. to 7s. per lb.
ZINC SULPHUR.—11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.
ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity.
 Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. 2d. to 2s. 3d. per lb.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. 10½d. per lb.

ACID, SALICYLIC, B.P. FULV.—1s. 4½d. to 1s. 6d. per lb. Technical.—10½d. to 11½d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. per lb.

BISMUTH CITRATE.—9s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 9d. per lb.

BISMUTH SUBNITRATE.—8s. 3d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.

BISMUTH OXIDE.—12s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTH ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts., 11d. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 2s. to 2s. 3d. per lb.; potassium, 1s. 8½d. to 1s. 11½d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—B.P., 1s. 3d. to 1s. 5d. per lb.

CAMPOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—11d. to 1s. 0d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels ex wharf.

GAUACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—1s. 11d. to 2s. 2d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 9d. per lb.; potassium, 3s. per lb.; sodium, 2s. 11d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 3s. 1d. to 3s. 4d. per lb.; U.S.P., 2s. 9d. to 3s. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 21s. 6d. per lb. net; Synthetic, 10s. to 11s. per lb.; Synthetic detached crystals, 11s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph., B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 3d. to 1s. 6d. per lb.

METHYL SULPHONAL.—8s. 9d. to 9s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PRENACETIN.—2s. 5d. to 2s. 8d. per lb.

PRENAZONE.—3s. 9d. to 4s. per lb.

PRENOPHTHALIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less ½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 6d. to 2s. 9d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—47s. per lb.; in quantity lower.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911—2s. 3d. to 2s. 6d. per lb., B.P.C. 1923—2s. 8d. to 2s. 9d. per lb. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 6½d. to 1s. 7d. per lb. Crystal, 1s. 7d. to 1s. 8d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 6d. to 6s. 9d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 12s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—6s. 6d. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—4s. 6d. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.

COUMARIN.—8s. 6d. per lb.

CITRONELLOL.—10s. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—12s. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—16s. per lb.

LINALOL.—Ex Bois de Rose, 13s. per lb. Ex Shui Oil, 9s. 3d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil Linalol, 10s. 6d. per lb.

METHYL ANTHRANILATE.—8s. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—34s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—45s. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—23s. per lb.

BOURBON GERANIUM OIL.—20s. per lb.

CAMPOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—12s. per lb.

CINNAMON OIL LEAF.—7s. per oz.

CASSIA OIL, 80/85%.—6s. 9d. per lb.

CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. U.K. port. Ceylon, pure, 1s. 11d. per lb.

CLOVE OIL (PURE 90/92%).—9s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—2s. per lb.

LAVENDER OIL.—Mont Blanc, 48/50%, Esters, 16s. 9d. per lb.

LEMON OIL.—14s. 9d. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—21s. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—12s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 16s. per lb.; Japanese, 8s. 6d. per lb.

PETITGRAIN.—8s. 6d. per lb.

SANDALWOOD.—Mysore, 28s. per lb., 95% 18s. 9d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, January 3, 1929.

ON resumption of business after the holidays the chemical market displays a firm position, and prices for a number of products are higher for the current year. Demand for early delivery is, of course, somewhat restricted owing to stock-taking and New Year holidays in the north. Greater confidence is now being shown by consumers in the placing of their orders for forward delivery, and a large amount of business has already been placed for delivery over the whole year. Export trade is also better and shipments are moving in greater volume.

General Chemicals

ACETONE.—Higher prices at £77 to £85 10s., according to quantity, are now being quoted, with the market firm and supplies still rather scarce.

ACID ACETIC.—A fair business is passing at unchanged rates, which are firm.

ACID CITRIC.—Little business offering, and price easier at 2s. to 2s. 4d., less 5%.

ACID LACTIC.—In moderate demand at £43 per ton for 50% by weight, standard pale quality.

ACID FORMIC.—Only a small demand at about £43 for 85% material.

ACID OXALIC.—Demand is quite good, and price holds firm at £30 10s. to £32 10s. per ton, according to quantity.

ACID TARTARIC is in steady request at about 1s. 4½d. to 1s. 4¾d. per lb., less 5%.

ARSENIC.—Business is inclined to be on the slow side, although the price is now steady at £16, f.o.r. mines.

AMMONIUM CHLORIDE.—Dearer prices are now quoted, and there is a larger demand. Some grades are in rather short supply.

ALUMINA SULPHATE.—Substantial business has been placed, and price is firm at £6 15s. to £7, with supplies still scarce.

BARIUM CHLORIDE.—The market is extremely firm at about £11 to £11 10s., with only small supplies available. Demand continues active, and firm conditions are likely for some time.

COPPER SULPHATE.—An active demand is in the market, with prices again higher in sympathy with the rise in the metal. Supplies for near delivery are scarce.

CREAM OF TARTAR.—Only a small trade is passing, and price is easier at about £95 to £97 10s. for B.P., 99/100%.

FORMALDEHYDE is in good demand, and price rules firm at £39, with the forward position inclining to a higher figure.

LEAD ACETATE.—Price holds firm at £42 10s. for white, and £1 per ton less for brown, with a steady demand.

LEAD NITRATE is in fair request at about £36.

LIME ACETATE.—The grey quality is still in short supply, with price firm and dearer.

LITHOPONE.—Prices have advanced to £19 10s. to £21 per ton, according to quality and demand is improving.

METHYL ACETONE.—Firm and in short supply. Present prices range from £58 to £60 per ton for 45% material.

METHYL ALCOHOL continues firm and in good demand.

POTASSIUM CHLORATE.—Demand moderate at unchanged prices.

POTASSIUM CARBONATE AND CAUSTIC.—In steady demand at unchanged prices.

POTASSIUM PERMANGANATE.—Good business is passing, and price at 5½d. to 5¾d. for B.P. material is firm.

POTASSIUM PRUSSIAN.—Market continues active, and price is firm at £63 10s. to £65 10s., according to quantity.

SODIUM ACETATE.—This product is in good request at firm price of £21 10s. to £22, with supplies for early delivery short.

SODIUM BICHRONATE.—Substantial business at the new prices has been done, with little, if any, outside material available. Market is firm.

SODIUM CHLORATE continues firm at £25 to £26 per ton.

SODIUM NITRITE.—Good business is passing at £20 per ton.

SODIUM PHOSPHATE.—Demand is active, with price firm at £12 per ton.

SODIUM PRUSSIAN.—Price unchanged at firm rates of 4½d. to 5½d. with a good demand.

TARTAR Emetic continues in fair demand at 10½d. per lb.

ZINC SULPHATE unchanged at about £12, with a fair demand.

Coal Tar Products

The market for coal tar products remains quiet, with little change in prices to report.

MOTOR BENZOL is still scarce, the price being about 1s. 7½d. per gallon, f.o.r. makers' works.

SOLVENT NAPHTHA remains firm at 1s. 2½d. per gallon, on rails.

HEAVY NAPHTHA is unchanged at 1s. 1d. to 1s. 1½d. per gallon, on rails.

CREOSOTE OIL remains weak, and can be bought at 5½d. per gallon, on rails in the North, and at 6d. per gallon in London.

CRESYLIC ACID is still weaker, the 98/100% quality still being quoted at 2s. per gallon, however, and the dark quality 95/97% at 1s. 9d. per gallon, f.o.b.

NAPHTHALENE is unchanged, the fire-lighter quality being available at about £4 10s. per ton, the 74/76 quality at £5 per ton, and the 76/78 quality at £6 to £6 5s. per ton.

PITCH remains unchanged at about 40s. per ton, f.o.b. U.K. ports.

Scottish Chemical Market

OWING to the incidence of the New Year there is no Scottish market report this week.

Nitrogen Products

Sulphate of Ammonia.—Satisfactory demand continues from several countries, and prices have been advanced to £10 per ton f.o.b. U.K. port in single bags, for prompt shipment. Slightly higher prices continue to be quoted for forward shipment. It is understood that merchants are commencing to cover their spring requirements and that in many parts of the country makers are fully occupied with home deliveries.

Nitrate of Soda.—On account of the great increase in the production of this product, stocks in Chile and in the large consuming markets are now estimated to be just over two million tons. It is anticipated, however, that on account of the lower prices in operation for the consuming season, these stocks will be readily absorbed. The price is almost exactly equivalent to the delivered price for sulphate of ammonia in operation for European countries. No delivered prices are fixed in the United States, where regular purchasing continues to keep the market quite firm.

Latest Oil Prices

LONDON, January 2.—LINSEED OIL was steady and about unchanged. Spot, ex mill, £29; January, £28; February-April, £27 17s. 6d.; May-August, £28 7s. 6d.; and September-December, £28 15s. RAPE OIL was inactive. Crude, extracted, £42; technical, refined, £44, naked, ex wharf. COTTON OIL was quiet. Egyptian crude, £30; refined common edible, £35 10s.; and deodorised, £37 10s., naked, ex mill. TURPENTINE was inactive and unchanged. American spot, 48s. 6d., and February-April, 49s. 3d. per cwt.

HULL, January 2.—LINSEED OIL.—Spot to August, £28 5s.; September to December, £28 12s. 6d. per ton, naked. COTTON OIL.

—Egyptian, crude, spot (new), and January-February, £29; edible refined, spot and January-February, £33; technical, spot, £32 10s.; deodorised, spot, £35 per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £37 per ton, naked. GROUND-NUT OIL.—Crushed extracted, £38; deodorised, £42 per ton. SOYA OIL.—Extracted and crushed, £33; deodorised, £36 10s. RAPE OIL.—Crude/extracted, £40 15s.; refined, £42 15s. per ton. TURPENTINE.—Spot, 50s. 6d. per cwt., net cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

South Wales By-Products

THERE is very little activity in South Wales by-products at the moment, the effects of the holidays still being evident. The New Year is not being viewed as a remedy for bad business, but there is a belief that it should see better times than those experienced during 1928. Pitch continues to be a quiet feature, with values nominal at from 36s. to 39s. per ton f.o.b. Refined tars are comparatively healthy, with prices unchanged. Coke oven tar is steady round the 7d. to 7½d. per gallon, delivered, mark, while gaswork's tar continues to change hands at from 6½d. to 7d. per gallon delivered. Crude naphthalene, which has only a small call, is unchanged round 80s. per ton, while whizzed receives little attention at about 100s. per ton. Patent fuel and coke exports have dropped, principally because of the holiday interference with shipping, but prices are unchanged. Patent fuel, ex-ship Cardiff, from 20s. to 21s. 6d. per ton; ex-ship Swansea, 19s. 6d. to 19s. 9d. per ton. Coke, best foundry, 32s. 6d. to 37s. per ton; furnace, 19s. to 21s. per ton. Oil imports over the last four ascertainable weeks amounted to 22,171,513 gallons.

Bequest for Eastern Colleges

THE RESIDUE OF THE ESTATE of the late Mr. Charles M. Hall, "the father of aluminium," will be distributed by the trustees to twenty-one higher educational institutions in Eastern countries. The amount is stated to be £2,000,000.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, January 3, 1929.

AFTER the almost entirely lifeless period in the chemical market here last week, there has been rather more doing during this week, although, of course, holiday influences have continued to operate. Interest in the market has been mainly in connection with forward delivery transactions, inquiry in this respect being on a fair scale, while a not unsatisfactory volume of actual business for deliveries ahead has been reported.

Heavy Chemicals

Sulphide of sodium keeps steady at £9 10s. to £10 per ton for the 60-65 per cent. concentrated solid and about £8 for the commercial quality, though the demand for this has been slow during the past week. Inquiry for saltcake has also been rather poor, with contract offers at £2 12s. 6d. per ton. A fair amount of forward buying has been going on in the case of caustic soda, the revised quotations for which for this year's delivery range from £12 17s. 6d. to £14 17s. 6d. per ton, according to grade. There is a quietly steady demand about for alkali at round £6 2s. 6d. per ton. With regard to prussiate of soda, values in this section keep firm at from 4½d. to 5½d. per lb., according to quality, and a moderate business has been done. The demand for bleaching powder this week has been somewhat inactive, with quotations at from £6 15s. to £7 per ton. Contract offers of bichromate of soda over the first half of the current year are on the basis of 3½d. per lb., less 2½ per cent., with spot quotations net. There is not much doing in phosphate of soda at the moment, but at about £12 5s. per ton values are keeping up fairly well. A moderate business is reported in the case of bicarbonate of soda at £10 10s. per ton. Chlorate of soda shows little change in the price position, about 2½d. per lb. being quoted; there has not been much actual business done this week, however. Hypo-sulphite of soda is in quiet request, but values in this section keep steady, the photographic material being quoted at £15 5s. per ton and the commercial kind at about £9.

Bichromate of potash has been the subject of a moderate amount of interest, with the new contract rate of 4½d. per lb. now in operation. Yellow prussiate of potash is firm and in moderate inquiry at from 6½d. to 7½d. per lb., according to quantity. Permanganate of potash is only in small demand at the moment, with offers of the commercial quality at 5d. to 5½d. per lb., and of the B.P. material at 5½d. Caustic potash is moving off in fair quantities with values unchanged since last report, £33 5s. per ton being quoted for prompt delivery of one to five-ton lots. Carbonate of potash keeps steady at about £26 5s. per ton, ex store. Inquiry for chlorate of potash is on the slow side, but offers are on a fairly steady basis at 3d. per lb.

Sulphate of copper continues to display marked firmness at up to £27 per ton, f.o.b., and the demand for this shows indications of recovering to its level before the holidays. In the case of arsenic, however, the demand is still on restricted lines at about £16 5s. per ton at the mines, for white powdered, Cornish makes, the tendency being easy. The movement of the lead products is slow, but quotations are steady at about £40 per ton for white acetate and £39 for brown, with nitrate of lead quoted at £34 10s. to £35 per ton. Continued firmness characterises grey acetate of lime, and from £17 10s. to £17 15s. per ton is now being asked; brown quality, however, is about unchanged at £9.

Acids and Tar Products

Fairly high prices are still being asked for spot lots of citric acid, current offers being at about 2s. 4d. per lb. Tartaric acid remains steady at from 1s. 4d. to 1s. 4½d. per lb. There has been no alteration in the position of acetic acid, the glacial quality being quoted at about £67 per ton and the 80 per cent. commercial at about £36 10s. With regard to oxalic acid, the demand for this is quiet, but values are maintained at up to £1 12s. per cwt.

The demand for the by-products generally has been slow this week, and in some instances prices are nominal. Offers of pitch for export range from £1 15s. to £1 16s. per ton, f.o.b., with creosote oil still in the neighbourhood of 5½d. per gallon. Crude carbolic is quoted this week at 1s. 10½d. per gallon, naked, with crystal quality well held at 6½d. per lb. Solvent naphtha keeps steady, although only in moderate request at 1s. 1d. per gallon.

Nitrate Company Meetings

Pan de Azucar and Santiago

THE twenty-seventh annual general meeting of the Pan de Azucar Nitrate Co., Ltd., was held on Friday, December 28, at Winchester House, London. Mr. Santiago Sabioncello presided, and in moving the adoption of the report and accounts, said that the company's oficina remained closed during the whole of the year under review to enable extensive alterations and additions to be carried out. Owing to delays in delivery of machinery, it was not found possible to commence the manufacture of nitrate until July 19, and in the meantime stoppage expenses were considerably augmented. While it was anticipated that when initial difficulties were overcome and maximum output was reached there would be a substantial reduction in cost, the board did not consider it to be such as to justify carrying the whole of the cost of the alterations to capital account. The promise of the Government to assist the industry had been fulfilled. By the practical aid thus accorded, manufacturers of Chilean nitrate had been enabled to market their product in competition with synthetic fertilisers at prices which were below those obtained before the war.

The twenty-ninth annual general meeting of the Santiago Nitrate Co., Ltd., was held at the offices, 27, Leadenhall Street, London, on Friday, December 28. Mr. Edward Eyre, the chairman of the company, who presided, said that the oficina having remained during closed the whole of the year, i.e., from July 1, 1927, to June 30, 1928, the figures in the balance-sheet showed but little variation as compared with last year's accounts, but he would point out that the coast and London administration expenses had been materially reduced. For the year ended June 30, 1927, they amounted to £7,459 1s. 5d., and for the twelve months under review they were £5,216 6s. 4d. Moreover, for the current year they will be still smaller because at the close of last year when it was realised that the oficina could not be reopened at least for some considerable time owing to the impossibility of earning adequate profits with the fixed selling prices for the present nitrate year, it was decided to make a drastic cut in the general administration disbursements. In pursuance of this policy the late secretary and director, Mr. Frames, who had served the company for nearly thirty years, was retired and given a retirement compensation of £3,000; the London office was disposed of, the company transferred to the present one, and the three remaining directors' fees reduced to the nominal amount of £60 each per annum; moreover, the directors waived all the moneys due to them during past years when only a portion of the fees had been paid, although they had been charged in the profit and loss account of the respective balance-sheets. Similarly, the monthly disbursements on the coast have been reduced to the lowest possible limit compatible with the safety and necessary upkeep of their property in Chile. Whether the system under which the industry was now working would be successful remained to be seen. In conclusion, he referred to the paragraph in the directors' report advising that certain people in Chile had approached their agents in Iquique with a view of purchasing the company's property. Permission had been given to these people to examine the oficina and grounds, and they had been informed that a reasonable offer would be submitted by the directors to the shareholders. The previous day they cabled to the coast asking how the matter stood, and they had received a reply stating that the would-be purchasers would examine the property, but were disappointed that no price had been indicated.

Ceramic Society's Visit to U.S.A.

THE arrangements announced for the Ceramic Society's visit in the spring to the United States promises a tour of exceptional interest. The party will be divided into three groups: (1) pottery, tiles and white-ware generally; (2) refractories; and (3) building bricks and heavy clay wares. Arrangements have been made with the Cunard Line to sail from Southampton in the *Laconia* on April 20, 1929, arriving at New York on April 29, and to return from New York in the *Scythia* on May 18, arriving at Liverpool on May 27. The itinerary will be mainly confined to the United States, where visits will be paid to Philadelphia, Washington, Pittsburgh, Buffalo, Syracuse, and many other centres.

Company News

ANGLO-AMERICAN OIL Co.—No interim dividend is to be paid by the company, on account of 1928.

ALLEN-LIVERSIDGE.—The directors have declared an interim dividend on the ordinary shares, on account of the year ending April 30, 1929, of 5 per cent. (actual), less tax.

TARSLAG (1923).—In view of the trading results of the year, the directors have decided that payment of a dividend on the preference shares on December 31, 1928, is not warranted.

Tariff Changes

POLAND.—As from December 12, 1928, Customs duty on imported dyestuffs and chemicals for use in the manufacture of coloured artificial silk or mixed silk fabrics will be refunded to the manufacturer.

ANTIGUA.—The Customs duty on imported quinine has been abolished.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

SEWAGE DISPOSAL APPARATUS.—The Officer-in-Charge of H.M. Trade Commissioner's Office at Toronto has forwarded to the Department of Overseas Trade a specification relative to a call for tenders for the supply and delivery and erection of sewage disposal apparatus at Hamilton, Ontario. (Reference No. A.X. 7318.)

PUMPING MACHINERY, FILTERS AND ACCESSORIES.—The Egyptian Ministry of the Interior is calling for tenders, to be presented in Egypt by January 31, 1929, for the supply of pumping machinery, filters and accessories. (Reference No. A.X. 7308.)

Towns' Gas from German Lignite

EXPERIMENTS are being conducted in Kassel the object of which is to ascertain if lignite, or soft coal, is suitable for the production of gas that can be used for domestic and industrial purposes. The Chief Burgomaster, Dr. Stadler, stated that the owners of hard-coal mines in the Ruhr district had united to form a company which intended to supply the whole of the Rhineland and Westphalia, and ultimately adjacent provinces, with gas produced at the pitheads and conveyed to the consumers by an elaborate system of underground mains, so as to do away with uneconomical gasworks. The German lignite industry thereupon also resolved to ascertain if gas of good quality could be obtained from their product and distributed to distant consumers. They therefore constructed special experimental gasworks at Kassel capable of supplying a town of 20,000 to 30,000 inhabitants. A special laboratory has also been constructed and equipped for testing lignite gas taken from mains as well as all the properties of the subsidiary products. At the commencement lignite briquettes are to be used, but later it is proposed to supply dried soft coal to the ovens, and ultimately it is hoped that it will be possible to use soft coal as it comes straight from the mines.

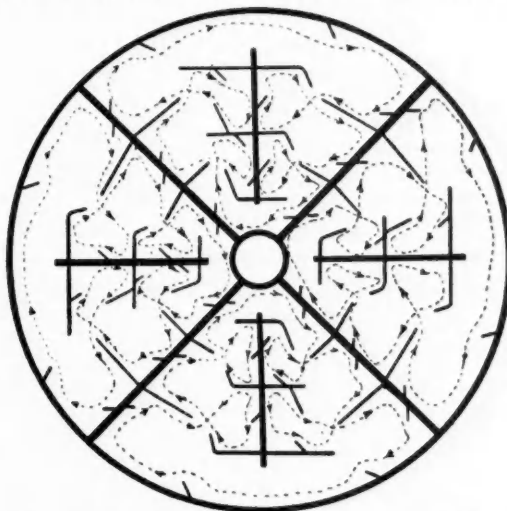
Production of Oil from Australian Coal

GERMAN and Australian interests (states *The Daily Telegraph*) are co-operating in a large scheme for the extraction of oil and other by-products from Australian coal. With this object in view some 32,000 acres have been acquired at Ellalong, in the West Maitland district of the northern coalfields of New South Wales. It is reported that £3,000,000 will be spent on the enterprise, which will employ 1,500 Australian workmen. A plant which has been found successful in Germany will probably be installed, German experts being introduced to instruct the Australian staff. Activities are proceeding in other directions in Australia with the same object. Imperial Chemical Industries are much impressed by the possibilities and are installing an experimental plant to test the treatment of brown coal in Victoria, and other large concerns are proceeding in the same direction.

The Radial Path Drum Drier

A BROCHURE from W. J. Fraser and Co., Ltd., of Dagenham, describes the Fraser radial path rotating drum drier. This drier is a type of rotating drum drier designed for uniform drying with the lowest expenditure of heat and power. In its original form, the rotating drum drier consists of an inclined steel cylinder fitted internally with vanes. The material to be dried is lifted by these vanes as the cylinder rotates, and falls through a stream of warm air. The greater part of the drying action takes place while the material is falling through the drying atmosphere. This type has several disadvantages in that the falling material is confined to that part of the cross-section lying near the sides of the drum. The air in the centre of the drum is non-effective, and the apparatus thus unnecessarily large and heavy. Also the warm air tends to pass quickly through the centre of the drum, where it is free from obstruction, and thus passes out of the drier without becoming saturated. It is claimed that the radial path drier offers the most complete solution to the various difficulties attendant on the older types. In it the material to be treated falls through the air stream across the whole cross-section of the drum.

Reference to the cross-section diagram appended will show how the improvements have been secured. In the type shown the drum is divided longitudinally into four cells.



CROSS-SECTION OF THE RADIAL PATH DRUM DRIER.

Inside these cells are fixed longitudinal baffles, some attached to the walls and partitions of the drum, and some placed centrally in each cell, as shown above. These baffles are so disposed that any particle of material placed in one of the cells traces out the path indicated in the diagram by a dotted line, when the drum is caused to revolve. The material thus proceeds from one end of the inclined drum to the other, tracing out a radial spiral path, and circulating through the whole of the cross-section of its particular cell.

The radial path rotating drum drier has been found especially suitable for such products as: Coal, lignite, graphite, charcoal; china clay, fertilisers, superphosphates, phosphates and heavy chemicals generally; ammonium salts and other easily dissociated materials; calcium acetate, sugar, starch pulp, etc.; vegetable products, such as sugar beet.

Mixed Fertilisers in Germany

It is expected that the production of mixed fertilisers in the new factory of the Kali-Industrie A.G., of Kassel, and the Klocknerwerke, of Rauxel, will soon start production. It is planned to produce a high percentage of nitrogen and potash fertilisers from ammonia and crude potash, to replace to a considerable extent the sales of simple potash products and obviously to compete with the Nitrophoska of the I.G. Farbenindustrie. The Kali Industrie's second new factory in Sondershausen, for the same kind of fertiliser, the construction of which was started about nine months ago, is also nearing completion.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

ANGUS CHEMICAL CO., Dudley Hill Road, Undercliffe, Bradford. (C.C., 5/1/29.) £14 18s. 10d. November 15.

STANSFIELD, John, "Boothfold," Waterfoot, Rossendale, chemical manufacturer. (C.C., 5/1/29.) £25 4s. 10d. November 21.

Receivership

NEW BRITANNIC CHEMICAL CO., LTD. (R., 5/1/29.) W. J. Pallot, Incorporated Accountant, of 128, Bute Street, Cardiff, was appointed Receiver and Manager on November 29, 1928, under powers contained in debenture dated July 19, 1922. R. Leyshon ceased to act in the above capacities on the first mentioned date.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

HOLDEN (ARTHUR) AND SONS, LTD., Birmingham, paint manufacturers. (M., 5/1/29.) Registered December 11, £200 debentures, part of £20,000; general charge. *£8,600. June 28, 1928.

MACLEANS, LTD., London, N.W., manufacturers of toilet specialities. (M., 5/1/29.) Registered December 6, £200 debentures, dated June 13, 1927, balance of £4,000; general charge. *£4,000 debentures. October 15, 1928. (See Satisfaction.)

NITRO-CELLULOSE EXPLOSIVES CO., LTD., London, W.C. (M., 5/1/29.) Registered December 12, £200 debentures, part of £12,500; general charge.

PEELMONT ART SILK BLEACHERS, LTD., Manchester. (M., 5/1/29.) Registered December 14, £1,500 debentures; general charge.

Satisfactions

HANCOCK (JAMES) AND SON, LTD., Worcester, colour manufacturers. (M.S., 5/1/29.) Satisfaction registered December 10, £200, part of amount outstanding July 1, 1908.

MACLEANS, LTD., London, N.W., manufacturers of toilet specialities. (M.S., 5/1/29.) Satisfaction registered December 6, £4,000, registered February 15, 1927, to December 6, 1928.

HUNT (JARED TERRETT) AND SON, LTD., London, E., agricultural chemists. (M.S., 5/1/29.) Satisfaction registered December 20, £6,000, registered October 25, 1927.

London Gazette, &c.

Companies Winding Up Voluntarily

BRITISH POTASH INDUSTRIES, LTD. (C.W.U.V., 5/1/29.) At an extraordinary general meeting of the above named company, duly convened, and held at 4, London Wall Buildings, London, on Thursday, November 15, the following resolution was duly passed; and at a subsequent extraordinary general meeting on Friday, November 30, such resolution was duly confirmed as a Special Resolution:—"That the Company be wound up voluntarily"; and that H. R. Smith, chartered secretary, of 4, London Wall Buildings, London, E.C.2, be

and he is hereby appointed liquidator for the purpose of such winding-up at a fee of ten guineas."

GUSH'S ELECTROLYTIC SYSTEM, LTD. (C.W.U.V., 5/1/29.) At an extraordinary general meeting of the above named company, duly convened, and held at 15-16, Cullum Street, London, E.C.3, on December 18, the following extraordinary resolutions were duly passed:—(1) "That it has been proved to the satisfaction of this meeting that the Company cannot, by reason of its liabilities, continue its business, and that it is advisable to wind up the same, and accordingly that the Company be wound up voluntarily." (2) "That H. C. Garland, incorporated accountant, of 111, Moorgate, London, E.C.2, be and is hereby appointed liquidator for the purpose of such winding-up."

New Companies Registered

ADAK, LTD.—Registered December 22. Nom. capital, £100 in £1 shares. Manufacturers, importers and exporters of and dealers in all kinds of dyes, dyestuffs, chemicals, drugs, paints, varnishes, etc. A subscriber: E. R. Gillingham, 22, Ossian Road, Stroud Green, London, N.4.

BLAZERS (GLASGOW), LTD., 22A, West Nile Street, Glasgow.—Registered in Edinburgh on December 28. Nom. capital, £4,000 in £1 shares. Objects: To carry on the business of manufacturers of firelighters, chemical manufacturers, dealers and merchants, etc. Directors: J. Naismith, N. M. Roemmile, R. B. Marshall, J. A. Montgomerie.

COLARDO PRODUCTS, LTD.—Registered December 31. Nom. capital, £15,000 in £1 shares. To acquire the trade mark "Colardo," and the benefit of all or any options, agreements, concessions or licences relating to the manufacture of fireproof or weatherproof paint, and to carry on the business of manufacturers of and dealers in glues, pigments, oils, adhesives, chemical compounds, cellulose products, etc. Directors: N. Pal, 182, Haverstock Hill, Belsize Park, London; L. Roney.

MURRAY AND JONES, LTD., 22, Meredith Street, Plaistow, London, E.13.—Registered December 29. Nom. capital, £10,000 in £1 shares. To adopt an agreement with G. Lloyd-Jones, and to carry on the business of general merchants and agents, and paint, enamel, colour, varnish and liquid glue manufacturers carried on by him and recently by him in partnership with R. Murray as Murray Jones and Co., or Murray and Jones, at Meredith Street, Plaistow, E. Directors: G. Lloyd-Jones, B. Lloyd-Jones, Miss Phoebe Harber.

NORTHERN REFINING AND MANUFACTURING CO. (LANCASHIRE), LTD.—Registered December 31. Nom. capital, £10,000 in 9,000 ordinary shares of £1 each and 20,000 deferred shares of 1s. each. Export and import merchants, oil refiners and blenders, chemical brokers, importers and exporters of petroleum products, etc. A director: H. V. Ferro, Edge Lane, Liverpool.

PENGWERN AND GWYDYR QUARRIES, LTD.—Registered December 27. Nom. capital, £25,000 in £1 shares. To adopt an agreement with F. M. Clements and Thos. W. Ward, Ltd., to acquire (1) Pengwern Quarries, at Blaenau Festiniog; (2) Coed Gwydyr Quarries, a mine known as Cae Coch Mine and a wharf known as Cae Coch Mine Wharf, adjoining the River Conway, near the said quarries, respectively, and (3) Pontycarw Quarries in the parishes of Llanrhydwyn and Trefrew, Carnarvon, and the easements, rights and appurtenances thereto, and to carry on the business of quarry masters and stone merchants, manufacturers and merchants of macadam and any other stone materials used in making roads and pavements, distillers of tar and its derivatives, manufacturers and merchants of residuals or by-products arising therefrom, and chemicals, manures and patent fuel, road and street contractors and pavement makers, etc. A subscriber: J. Ward, J.P., Endcliffe Grange, 50, Endcliffe Vale Road, Sheffield.

TEXSA, LTD.—Registered December 22. Nom. capital, £100 in £1 shares. Manufacturers, importers and exporters of and dealers in all kinds of dyes, dyestuffs, drugs, paints, varnishes, etc. A subscriber: E. R. Gillingham, 22, Ossian Road, Stroud Green, London, N.4.

